Midwest Engineer

SERVING THE ENGINEERING PROFESSION

WESTERN SOCIETY OF ENGINEERS FOUNDED 1869

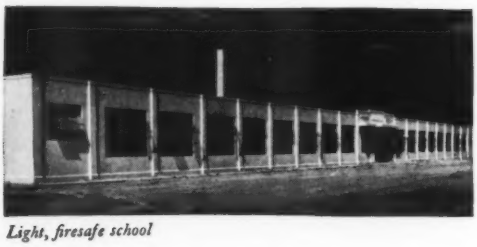
BEN MOREELL
ENGINEERS AND
ENGINEERING EDUCATION — PAGE THREE

Vol. 10 MAY, 1958 No. 12

Modern retail food store

Low-cost industrial building

Two-story warehouse



Light, firesafe school

Eight-story office building

Concrete *Tilt-up* Construction Is Quick and Economical for Any Type Building

One of the fastest-growing building methods is concrete tilt-up construction. In this method, concrete walls are cast flat, usually right on the concrete floor, in edge forms and then tilted up into position with hoists or power cranes.

Tilt-up is adaptable to a wide range of uses and architectural effects. It is speedy, economical construction for almost any type of building.

Concrete tilt-up structures can be designed to conform with building codes. They're firesafe, decayproof, easily maintained and serve a lifetime at ***low annual cost*** under exposure to any anticipated forces, climates or conditions of use.

For more information get your free copy of a 32-page, illustrated booklet, "*Tilt-up Construction.*" Distributed only in the U. S. and Canada.

PORTLAND CEMENT ASSOCIATION
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work
111 West Washington Street, Chicago 2, Illinois

MIDWEST ENGINEER
Published Monthly
BY
THE WESTERN
SOCIETY OF ENGINEERS
AT
84 EAST RANDOLPH STREET
CHICAGO 1, ILLINOIS

William R. Marston.....*President*
Hjalmar W. Johnson.....*1st Vice-President*
John T. Rettaliata.....*2nd Vice-President*
Raymond D. Maxson.....*Treasurer*
J. Earl Harrington.....*Executive Secretary*

Trustees:

Robert H. Bacon
Philip L. Coleman
John R. Conrad
Clifford B. Cox
Frank W. Edwards
Virgil E. Gunlock
Arthur R. Harris
Ernest R. Hendrickson
Carl A. Metz
Howard R. Olson
Ernie A. Schmidt
Frank V. Smith

George L. Jackson.....*Past President*
Ormas G. Smith.....*Past President*
Theodore D. Hartsell....*Chairman, Publications Committee*

J. EARL HARRINGTON
Editor and Business Manager

HAROLD K. EATON
Managing Editor

GENERAL AND EDITORIAL OFFICES
HEADQUARTERS OF
WESTERN SOCIETY OF ENGINEERS
84 E. RANDOLPH STREET
CHICAGO 1, ILLINOIS
TELEPHONE: RANDOLPH 6-1736

The Society does not assume responsibility for statements and opinions in articles, papers and discussions appearing herein. All material must be submitted on or before the 10th of the month prior to date of publication.

Copyright 1958 by the
WESTERN SOCIETY OF
ENGINEERS

Permission is given for the reproduction of any material herein, provided due credit is given.

Single Copy .....$ .50
Annual subscription 4.00
Foreign subscription 6.00

Entered as second-class matter at the post offic at Chicago, Illinois under the Act of March 3, 1879.

Midwest Engineer

A Publication of the

WESTERN SOCIETY OF ENGINEERS

Serving the Engineering Profession

May, 1958 Vol. 10, No. 12

CONTENTS

Engineers and Engineering Education 3
New Products 20
Professional Directory 22
ESPS Listings 24
Book Reviews 26
News of Engineers 28
Applications 30
Advertisers' Index 31

COVER STORY

Ben Moreell, 1958 recipient of the Washington Award, appears on this issue's cover. The award was conferred upon Mr. Moreell "for distinguished service as a skilled engineer, outstanding naval officer, industrialist, Christian layman and Hoover Commission associate." Please see pages 3 and 16 for more about the Washington Award presentation.

June 2 to August 29

Western Society

Presents

A New Buffet

in its

Air Conditioned 5th Floor Dining Room

Bar-Lounge

Now On Dining Room Floor

For Your Added Convenience

And Comfort

Come In Soon . . .

Your Wives and Guests

Will Enjoy The

Distinctive Atmosphere

ENGINEERS

AND

ENGINEERING EDUCATION

An address by Admiral Ben Moreell (CEC) USN, Retired

On the occasion of his receiving the Washington Award for 1958

It is with deep humility that I receive this honor. When one's accomplishments are publicly recognized, it brings great satisfactions. And when such recognition is accorded by professional colleagues, there is an added measure of gratification. For one hopes that, in the latter case, the donors are better equipped to appraise the values of his contributions to the spiritual and material progress of the community.

It is customary, perhaps even mandatory, on such occasions to mention those who have contributed to the achievements being acclaimed. In the present instance my debt to so many is so great that it is impossible to recall them all. But conscience demands that I acknowledge publicly my greatest debt, second only to those due my mother and my wife. My obligation is to that countless number of devoted toilers who, over the ages, have contributed to the great reservoir of human knowledge from which all of us draw our intellectual sustenance. All too frequently we forget our debts to our cultural and professional forebears, many of whom have gone unrecognized and unrewarded. But we who have benefitted from their works should know that were it not for the vast storehouse of knowledge, laboriously accumulated, it would be utterly impossible for us to make the current giant strides in science, technology and cultural pursuits.

I must note, also, with deep gratitude the many able and devoted associates whose loyal collaboration have enabled me to accomplish my tasks. I have been singularly fortunate in this respect, in my work prior to entering the Navy, during my naval career, and over the past eleven years in private industry.

Last, and of greatest importance, I pay tribute to my teachers in grade school, high school and university. My obligation to them can never be fully repaid. Over the years I have had many occasions to thank them for the knowledge imparted to me, for the good influences of their teachings and for the impress of their characters on my thoughts and actions.

Current Status

Because of the transcendent importance of teachers and educational processes in stimulating and making possible a high level of accomplishment, and in light of the rapid technological advances of recent years which are of such great significance to our material progress and our national security, it seems appropriate that we discuss briefly the current status of scientific and engineering education in our country.

Having been through the throes of organizing, recruiting, training, equipping and directing the activities of an engineering force of some 10,000 officers and 240,000 enlisted men during World War II, I have had a rare opportunity to appraise the relative values of their educational equipment as measured by quality of performance. I believe that my organization, the Navy Sea Bees, was the largest aggregation of technical engineers ever assembled in one working group. Of the more than 10,000 officers, some 80 per cent had one or more college degrees, and a number of the enlisted personnel were graduates of engineering and other schools of higher learning. It is pertinent to add that many of our outstanding officers and men were honor graduates of the "University of Hard Knocks," and these, too, made notable contributions to our accomplishments.

If all the things that have been said and written in recent months about scientific and engineering education were assembled in one place, they would constitute the most resplendent "crazy quilt" of diverse views the world has ever seen. At one extreme are those who contend that there are glaring deficiencies in the quality of our educational processes, beginning in the grade school, and that our procedures are such that the least competent are not improved while those with latent talent remain undeveloped. Others hold that what we are doing is without fault, but that we need more of everything, more students, more teachers, more classrooms, more equipment, and all of these deficiencies can be eliminated by massive applications of that traditional American cure-all—more money. And there are many who seem to believe that if it is *public* money, made available by the Federal Government, it will be even more effective! Between these two extremes are an almost infinite number of gradations of opinion.

We are in a controversy of major proportions which gains heat from the realization that the solutions reached might spell, ultimately, the difference between living as a free people and national extinction.

In considering such a problem as we now face, it seems to me that the first essential is to define our long-range objective. Certainly we need more scientists and engineers not only to regain the technological lead in offensive and defensive implements of war but also to keep pace with the expanding material needs of a rapidly changing civilization. *But we are equally in need of superior talents in all other areas of learning.*

To say that all of our problems, current and prospective, can be solved merely by educating more scientists and engineers is to close our eyes to the lessons of history. "Man shall not live by bread alone," said the Master Teacher, and He asked, "is not the life more than food and the body than raiment?"

Basic Essentials

What, then, is the ultimate objective, the long-range target? I would say that it is the enhancement of human values as measured in terms of *spiritual* and *material* progress. The real worth of every human action must be appraised in those terms. And, the most important instrument available to us for achieving progress toward that ultimate objective is education. We must face this question then: What are the basic essentials of an effective total educational structure?

It seems to me that they are four in number. In order of importance, they are as follows:

First: Good teachers.

Second: Good raw materials, i.e., a highly selective system for determining those upon whom the educational effort is to be expended.

Third: Proper curricula, and

Fourth: Bricks and mortar—suitable equipment for use in instruction.

An adequate discussion of these four foundation stones would take more time than is available to me tonight and would exhaust your patience. But, because of the importance of the subject, I venture to set forth certain brief observations in light of my experiences and studies. These have led me to conclude that the education of a scientist or engineer begins when he enters grade school. I subscribe wholeheartedly to the poet's judgment:

"'Tis education forms the common mind:
Just as the twig is bent the tree's inclined."

In this light, let us examine our current situation.

Good Teachers

First, with respect to teachers: Without good teachers we are sure to waste our "raw material," the students. The good teacher is not self-designated; he is designated by the student. It is not enough that he be learned; he must have learning that can be drawn upon. If I want to learn something, I look for someone who knows more about the subject than I do. And the more his knowledge exceeds mine, the greater his attraction for me. Good teachers always attract those most eager to learn, and they also inspire. Teaching is an art; and every genuine teacher is a special kind of an artist.

When one has something of value, it is natural for him to safeguard and protect it. Have we done this with our teachers? You know the answer, I am sure.

I shall not discuss in detail our profligate waste of teaching talent. It is notorious that we have failed to fairly compensate even our best teachers for their labors. Also, we have failed to accord them the respect and standing

No more Fuss*... or Muss* with GREASE

Josam SERIES JH

GREASE INTERCEPTORS

have an automatic* grease draw-off

The only interceptor that provides *automatic discharge* of intercepted grease at "the turn of a valve" — without removing cover . . . without touching the grease.

JOSAM "JH" Interceptor revolutionizes grease interception. It not only intercepts over 95% of the grease in waste water, but now, for the first time, it encourages grease removal because it is accomplished so easily and quickly, thereby keeping the interceptor always operating at top efficiency. Call or write for literature.

DISTRICT REPRESENTATIVES
SULLIVAN & LOVE
308 W. Washington Street • Chicago 6, Illinois
STate 2-2626

JOSAM MANUFACTURING CO.
General Offices and Manufacturing Division
Michigan City, Indiana

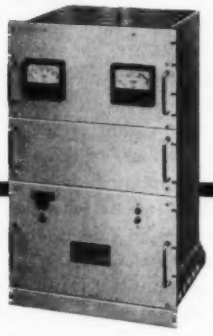
For Missile Testing and general use

30 to 300 Amps

- Closely Regulated
- Fast Response
- Underwriters Approved
- Rigid Quality Control

CHRISTIE SILICON POWER RECTIFIERS

Available in Industrial and Military types. Military type meets specs MIL-E-4970 and MIL-I-6181. Other stationary and mobile styles available up to 1500 Amps.



Write for Bulletin AC-58-A

CHRISTIE ELECTRIC CORP.
Dept. ME, 3410 W. 67th St.
Los Angeles 43

Over 28 Years of Rectifier Manufacturing

in the community to which they are entitled. Coupled with this, we have, in many instances, restricted their freedom to teach by confining them in academic straight-jackets, devised by the entrenched educationist hierarchy. Many of our most able teachers abandon the profession each year for more rewarding fields. Many who stay do so only for love of the service, and we take advantage of that devotion, to our own detriment. It is well known that many of our teachers spend a large part of their energies devising ways and means of making ends meet, energies which could be better used to increase their knowledge and their service to the community. Unless the American people are willing to pay a fair price in terms of money, esteem and academic freedom for the services of our teachers, the quality of education will deteriorate at a time when we can least afford it!

I do not mean to imply that there are no deficiencies in the training and talents of those upon whom we depend to teach our children. I shall have more to say about this later. But I do feel that the standards of compensation are set for the least competent rather than on the basis of individual worth. This is indeed profligate waste!

Good Raw Materials

The second essential is the raw material, i.e., students who are able to learn, to mature in understanding, and to develop a sensitive appreciation of the true, the good, and the beautiful. Here in America we have as fine a supply of raw material as can be found anywhere. Our children have a cultural heritage equal to that of any others and superior to many. We have the potential if we can but avoid the error of assuming that all men are born with the same talents and the same capacities to learn and to grow in wisdom. The law of human variation is not man-made, it is God-made, a fact of nature. Just as there were never two human beings born with the same finger prints, so do no two humans have the same mental, physical or moral capacities.

If we concede that individualities and inequalities in the physical, mental and moral characteristics of mankind is God's intent (and there is every reason to believe this), it is evident that any effort to repeal this natural law of variation by means of educational procedures is attempting the impossible. We might as well try to repeal the law of gravity.

It is clear that no two students have the same capability of learning and if we treat them as though they do, we will waste the talents of one or the other or both! The insistence that every educational system take account of individual differences is not to relegate certain people to an inferior status. Every person has aptitudes which permit him to excel in something. An engineer would probably make a poor metaphysician and vice versa, but it is improper to label one man inferior to the other on this ground.

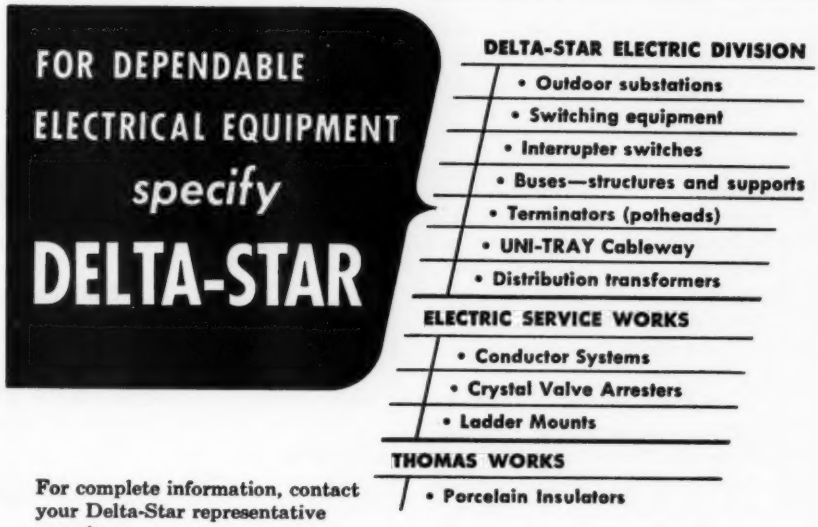
Let me quote here from an authority on this subject, Dr. Roger J. Williams, director of the world-famous Bio-Chemical Institute of the University of Texas. He said: "It is my confirmed opinion based upon diverse considerations and upon prolonged thought, that one of the most constructive and harmony producing moves that we, as inquiring human beings can make, is to get acquainted with, in the most scientific manner possible, the inherent differences that exist among members of the human family. . . . Why choose our own schools, our own amusements, our own books, our own church? Why not have someone tell us what to eat, what to drink, whom to marry, and when we can have children? The fundamental reason is that each of us is a different individual—with profound differences—and each of us wants to live his own life. . . . There is not the slightest danger that humanity will put up indefinitely with any scheme which involves thoroughgoing regimentation. It is not human nature to tolerate this. There are too many potential Patrick Henrys, and they will continue to reproduce."

Proper Curricula

And what of the third essential, the curriculum, with which I include the method of expounding the curriculum?

Specifically, what is our present situation with respect to preparatory processing of the raw material for our schools of higher learning? Even before the hysteria engendered by Sputniks 1 and 2, it was generally conceded by those interested in engineering and scientific education, by many educators and by industrialists who have to use the products of our high schools that something is amiss in our primary and secondary educational systems.

I shall not enter into the details of the hotly contested controversy over the worth, or lack thereof, of "progressive" education, so-called. I have been studying this subject for the past ten years. My conclusion is that many, but fortunately not all, of our preparatory schools



For complete information, contact your Delta-Star representative or write

Delta-Star Electric Division, H. K. Porter Company, Inc., Chicago 12, Illinois

H. K. PORTER COMPANY, INC.

DELTA-STAR ELECTRIC DIVISION

are not only failing to improve the raw material which comes to them, but in many instances they are actually spoiling it.

It is impossible to do justice to such a difficult, complex subject in a short time. Perhaps I would do well merely to summarize my views and those of some others. They are that the preparatory schools have in large part abandoned their emphasis on specific academic disciplines designed to develop the capacity of the student for creative thinking, and they have substituted an emphasis on social activities with attractive labels, such as group awareness, life adjustment, and something frequently referred to as "togetherness."

Commenting on the deterioration of standards of learning in our public schools, Felix Morely, noted educator, author and editor, had this to say in a recent article: "There is no lack of demand for competitive education in the United States—the failure is in the supply. Several factors have combined to create this anomalous situation. Perhaps the most influential is the extreme to which the plausible theory of progressive education has been carried. Starting from the reasonable thesis that schooling should be enjoyable, the trend in public education has gone on to eliminate all coercion, all task-work and almost all sharply competitive training. Unfortunately this misguided kindness has altogether failed to make the lives of teachers, pupils or parents happier. We do not need psychologists to tell us that the child whose will is never crossed is the one who makes himself and others miserable."

The results are inevitable and might well have been foreseen. The pupils have acquired smatterings of much unrelated information of little value as mental training and, for the most part, they have failed to acquire a capacity for that self-discipline which is essential to learning.

As for the teachers, the emphasis has now shifted from proficiency in their subjects and is directed toward acquiring a handiness with teaching *methods*, with corresponding neglect of the substance and content of knowledge. As Dr. Morley has stated so well, "The whole public school system is top-heavy with educationists who know how but not what to teach. Talent is no longer as important as the mere number of credits which teachers achieve in mandatory courses concerned with procedures rather than with content. Undoubtedly techniques are useful, but they do not of themselves make teachers any more than typing ability of itself creates authors.

"In the assembly line production of mechanically qualified educationists is found one of the primary reasons for the malaise in our public schools."

Four years ago, I participated in a seminar on scientific education conducted by The Edison Foundation, of which I am a trustee. In a discussion of science education in the high schools, an assistant high school principal and teacher of science in one of our largest cities, asserted that in his state, one of the most populous, only 10 per cent of the high school teachers of science had received training in the science subjects they taught while all had received extensive training in the methodology of teaching!

Canon Bell, the great Episcopal scholar, and my dear friend, in his book *Crowd Culture*, in the chapter on "The School," has this to say: "There is no getting around the fact that while our present teachers, and any we are likely to get, may be fairly competent to work in old-fashioned subject-matter and mind-training schools, they are simply not up to acting as preceptors, fathers and mothers, priests or rabbis or other ministers of religion, skilled counsellors, trained nurses and psychiatrists, all these rolled into one. It is not honest, not intelligent, for professional theorists to talk as though this is not the case, thereby leading the general public to suppose that the public schools ought to do, are doing, what in fact they cannot do; encouraging teachers to neglect what they are able to do, in order to dabble about in any number of tasks at which they are necessarily incompetent."

Father Bell quotes a West Coast High School teacher, one of many hundreds who wrote to him, as follows:

"What do we teach here? Scraps of literature and art, some unsystematic applied math, bits of history and geography, in fact, smatterings of almost all things academic and otherwise. These we try to 'integrate around vital central interests' such as how to date and mate and, if possible, avoid divorce; how to reform the City Hall; how to run the United Nations; how to plan cities; how to provide adequate housing; how to solve economic problems. All this when the pupils are fifteen years old!"

There are a great many similar statements from conscientious and worried teachers. Perhaps I can indicate what

(Continued on Page 12)

NASH BROTHERS CONSTRUCTION CO., INC.

Engineering Contractors

1840 South Kilbourn Avenue

Chicago 23

Calls for New Motor Design

"When more design engineers replace complete motors with only essential motor components—i.e. rotor and stators—as integral parts of the product they are designing, we are going to enter a new era of greater compactness and increased efficiency," A. S. Bickham, manager-motors design and distribution, A. O. Smith Corporation, said Apr. 14, in Chicago.

In a report prepared for release at the 1958 Design Engineering Show, held in Chicago's International Amphitheatre, the A. O. Smith Motor Division executive asserted that some design engineers are still hide-bound by their conception of the electrical power source as a motor made up as a complete package of rotor, stator, housing, controls, etc., that must be appended on and hooked into the equipment they are designing.

"Not so," Bickham asserted, "successful integration has been done in many areas. Competition and the fight for lower costs, plus the ever continuing demands for lighter weight and greater compactness in product has created many engineering designs that make the motor an integral part of the products. Examples, the home workshop, the compressor, hoists, etc."

I do not believe for a minute that this design technique will be an answer for all electrical powered equipment, Bickham asserted. "In fact, many manufacturers of electrically powered products will find it more beneficial to continue purchasing and installing the motor package as they have done in the past. But there are endless applications where the motor can be made an integral part of the product. And the smart design engineer is the one who will balance out both techniques before making his design decision."

Integration of the electrical power source with the product can improve product characteristics in performance, provide greater compactness and improved appearance and greatly reduce the costs of manufacture, Bickham said. "Savings in motor price alone can be gained by integration, with additional cost reductions coming from simplified product design, and other benefit factors."

"Making the motor an integrated part of the product can also be a real sales feature," Bickham pointed out, "one that will provide visual evidence of good engineering and easy-to-see promises of better performance through reduced weight, etc., for the buyer."

Integration of the electrical power source with the product can be described in a second, the A. O. Smith engineer said. "Instead of the motor manufacturer providing a complete package—motor and housing, base, and connections—the designer takes the rotor and stator for instance, and designs so that the steel used in his product can be formed to become also his "motor" housing.

These components can be designed, just as for conventional motors, to meet the needs of particular applications in regard to increment start, high slip, high starting torque, etc.

Polyphase assemblies are available in the ¾ to 150 horsepower range, a broad enough base to fit most needs of manufacturers. In addition, single phase assemblies up to and including 5 horsepower are available.

"The designer locks the drive shaft to be powered right into the rotor, and plans the electrical controls and connections so that the combined electrical power source and product become one compact integrated unit."

There are some factors to be remembered when planning to integrate, Bickham reported. First, close cooperation between the motor manufacturer's engineers and the product designer must be maintained. "This has added benefits in that these mechanical and electrical engineers, constantly working with such problems, can add their know-how as support to the designer's specialized abilities to create a team that builds optimum results in the final achievement."

In initiating a coordinated plan such as this, Bickham said, the designer must provide performance characteristics that have been established for the product he is designing. In addition, torque requirements, amount of cooling to be provided, mechanical limitations, and mounting details should be established to give the motor group a base from which to develop their recommendations.

Fine Grain Nickel

An unusual form of electrolytic nickel has been developed, reports *Chemical Engineering*. Very fine grained, it is hard enough to resist filing, but can be bent easily without cracking.

FEDERAL PIPE & SUPPLY CO.

900 S. CAMPBELL AVE.

CHICAGO 12, ILL

PIPE — VALVES — FITTINGS

PIPE FABRICATION

SEELEY 3-6960

Conference Set on Electrical Insulation

The First National Conference on the Application of Electrical Insulation, with the participation of manufacturers, distributors and users, has been convoked to meet at Cleveland on Sept. 3-5, 1958. It will be the first meeting of this type ever held in the United States attracting everybody either directly or indirectly interested in electrical insulation, both for military and civilian purposes. Attendance of between 1,500 and 2,000 is anticipated.

The conference is co-sponsored by the American Institute of Electrical Engineers (AIEE) and the National Electrical Manufacturers Association (NEMA). The purpose is to provide a meeting ground for the maker and user of electrical insulation where there can be a mutual interchange of practical information on a formal and informal basis, thereby leading to better utilization of existing materials, to better direction in the development of new materials and to better methods of interchanging information.

Activities at Cleveland will include technical sessions, a commercial trade show exhibiting electrical insulation materials, and technical exhibits by manufacturers of electrical equipment.

In addition to the co-sponsors—AIEE and NEMA—other technical societies and trade associations are participating in the counseling and preparation of the program of this, the first industry-wide conference ever devoted exclusively to electrical insulation materials.

Headquarters will be in the Pick-Carter Hotel. Technical sessions will be held concurrently in the Statler-Hilton and Pick-Carter hotels. Technical exhibits will be in the Statler-Hilton Hotel, and commercial exhibits will be in the Pick-Carter Hotel.

Technical papers to be delivered will cover a wide variety of subjects in the field of electrical insulation and the application of insulating materials in rotating machinery, transformers, controls and instrumentation, and in electronic equipment.

J. R. Perkins, of the Polychemicals Department, E. I. du Pont de Nemours & Co., Wilmington, Del., is the General Chairman of the Conference.

H. H. Chapman, Jr., of Owens-Corning-Fiberglas Corp., New York City, is the Program Chairman.

C. L. Christiansen, of Dow-Corning Corporation, New York City, is Exhibits Chairman.

T. F. Hart, Silicones Division, Union Carbide Corporation, New York City, is Publicity Chairman.

W. G. Hoffer, Johns-Manville Sales Corporation, New York City, is Publications Chairman.

Walter Hugger, Electrotechnical Products Division, Sun Chemical Company, Nutley, N. J., is Hospitality Chairman.

The AIEE is represented on the planning committee by R. S. Gardner, assistant secretary, Technical Activities, New York City, and NEMA by Joseph F. Miller, its managing director, New York City.

The Cleveland committee for the Conference includes Lanier Greer, Reliance Electric & Engineering Company, chairman; K. L. Wheeler, Cleveland Electric Illuminating Company, chairman, Cleveland Section, AIEE; C. E. Logston, Reliance Electric & Engineering Company, treasurer; A. D. Steele, Minnesota Mining & Manufacturing Co., hospitality; Harold L. Williams, Cleveland Electric Illuminating Co., registration; George Bamberg, The Glastic Corporation, publicity; S. F. Moat, The Glastic Corporation, technical exhibits.

Ship "Fenders"

Shock-absorbing pneumatic ship "fenders" are the latest development to protect ships, barges, and offshore drilling rigs from contact with docks or another ship, reports *Petroleum Week*. The fenders, shaped like a barrel and built like an automobile tire, are now undergoing tests on sea-going equipment. Metal plates built into the ends of the fenders are equipped with swivels so the fenders will roll with a ship.

IIT Announces New Curriculum

A new undergraduate curriculum in engineering sciences has been announced by Illinois Institute of Technology, Chicago.

The program, leading to a bachelor of science degree in engineering sciences, will stress mathematics and science and basic courses in several phases of engineering, according to Dr. Ralph G. Owens, MWSE, dean of engineering and co-chairman of the IIT curriculum committee.

The new curriculum is designed to satisfy growing demands from industry and government for men trained to develop and apply fundamental engineering knowledge, Owens said.

"As a result of this basic training in engineering and science, Illinois Tech will produce an engineer-scientist who is capable of working in many fields, including relatively new ones such as automation, electromechanical computation, and rocket and nuclear research," he explained.

Dr. Peter Chiarulli, chairman of the IIT mechanics department, will administer the program.

Planned to serve the needs of engineering students who have a definite aptitude for mathematics and science, the program will provide the best possible training for research, development, and high grade design work in engineering, said Chiarulli.

MUNCIE CONSTRUCTION CORP.

Contractors
for
Engineering — Construction

Substations
Transmission Lines
Distribution Systems

Utility Maintenance

201½ East Adams Street Muncie, Indiana

Under the new program, courses in the engineering sciences—heat transfer, thermodynamics, electrical theory, properties of materials, and advanced mechanics—will be stressed.

An integral part of the curriculum is elective sequences which produce a concentration in an engineering or science field. This concentration enables the graduating student to advance either to industry or to graduate school in that particular field.

IGY Studies May Help Control Weather

One result of studies during the International Geophysical Year may be man's control of the weather, the National Telemetering Conference was told in Baltimore, Md. on June 3.

Speaking of the heat and water balance of the earth, Rear Admiral Blinn Van Mater USN (Ret.), administrative officer of the U. S. Committee for IGY said that "The exploration of this area might reveal changes in the climate, establish the circulation of the atmosphere and currents of the seas, and foretell the change in the water table. From a practical side, more knowledge of this area will improve weather forecasting and may even lead to weather control with its tremendous effect on agriculture; will show the rate of change of the waters in the ocean and reveal their expected fertility, which plays such an important part in our life."

Adm. Van Mater was the principal speaker at the conference banquet in the Calvert Ballroom of the Lord Baltimore Hotel. The banquet guests were welcomed by G. M. Thynell, Conference Chairman. The conference is sponsored by the American Institute of Electrical Engineers, the American Rocket Society, the Institute of Aeronautical Sciences and the Instrument Society of America.

Adm. Van Mater said the IGY, in which 66 nations and 10,000 scientists are participating, will cost about $500,000,000.

"The direct cost to the United States," he said, "is at present 41 million dollars, which does not include contributions by established programs and logistic support by the Department of Defense; it has been established that the cost of the entire worldwide IGY is about 500 million dollars.

"The aim and object of the International Geophysical Year is to learn more about this universe in which we live. It is to explore further the disciplines of geophysics, the physics of the earth or the science of dealing with the phenomena which affect the earth, and to try to determine the relationship existing between the earth, the sun and the medium beween."

IGY, he said, "is an unprecedented observation period. It is an accumulation of data in many disciplines, and telemetry is playing an important part in each field of each science being observed; in some areas it is playing an essential role. Only with the aid of telemetry and high speed communications can the gathering of synoptic data be so extensive around the earth, in the earth, and above the earth. When the information is digested, theories will have been proven, revised or scrapped completely—opening the door to further exploration."

Space Age Creates Metallurgic Problems

The space age is creating new problems for the metallurgist a Toronto engineer reported, in Montreal on Apr. 22.

Although complex nickel and cobalt containing alloys have been widely developed and used during the past 15 years, a new look at their properties is necessitated because of the requirements of rockets, and the re-entry of guided missiles, K. B. Young, of International Nickel Company of Canada, Ltd., in effect told a symposium on high temperature materials for jets and rockets during the Canada-United States Chemical Engineering Conference. The conference is sponsored by the American Institute of Chemical Engineers (A.I.-Ch.E.) and the Chemical Institute of Canada.

"The continued development of the gas turbine," he said, "and present emphasis on the design and development of ram jet engines and rocket-propelled aircraft and missiles, have emphasized the need for both new materials of construction to withstand temperatures in excess of 2000°F and the re-evaluation of the properties and characteristics of existing materials to ensure their efficient utilization.

"Engineering requirements for current applications are severe. We are told, for instance, that the boundary layer temperature at the nose of long-range guided missiles after re-entry into the atmosphere at, say an altitude of 85,000 feet and a speed of Mach. No. 18 (18 times the speed of sound) can reach approximately 12,000°F. Less spectacular but equally severe are the temperatures encountered in the propulsion systems which in the combustion chamber of a rocket engine may reach gas temperatures of 2,500° to 4,500°F. In the absence of suitable materials of construction, the designer is faced with a major engineering problem of maintaining the actual surface temperature at a substantially lower level."

Young said that today's so-called heat resisting alloys, with melting points in the range of 2500° to 2600° F and a limiting temperature of useful strength considerably below this, "are clearly incapable of sustaining such temperatures and even as a composite laminate, place a burden on the designer."

FRED L. NELSON OF DAYTON, OHIO

Line Clearance for Public Utilities

Home office —
1014 Gem City Savings Bldg.
Dayton 2, Ohio

Illinois office —
1226 Black Road
Joliet, Illinois

ORIGINATORS OF DROP CROTCH AND LATERAL METHOD OF TRIMMING

Control Rods May be Eliminated

The possibility of eliminating control rods in nuclear power reactor to reduce the cost of producing electric power was advanced in Montreal on Apr. 21 in a paper presented at a heavy water symposium during the Canada-United States Chemical Engineering Conference, sponsored by the American Institute of Chemical Engineers and the Chemical Institute of Canada.

David P. Herron, of American Standard, Atomic Energy Division, Mountain View, California, in a paper, "Heavy Water Reactors for Power Production," pointed out that though heavy water is the most attractive moderator for thermal reactors because of its high moderating ratio which permits excellent fuel economy, plant costs, fuel fabrication and charges for and inventory of heavy water would bring the total power cost in the range of 12 mills per kilowatt hour from heavy water and other types of reactors. Large coal fired generating plants are said to produce electric power at a cost of only about 7 mills per kwh.

He listed the advantages of heavy water reactors as: excellent neutron economy, giving low burn-up costs; use of natural uranium as fuel and long neutron lifetime, giving some safety advantages. Some disadvantages were listed as: poorer slowing down properties than light water, necessitating larger lattice spacings and requiring larger cores to achieve practical values of resonance escape probability and reactivity; and the requirement for stringent design measures to keep heavy water inventory and leakage within reasonable values.

Pointing out that nuclear plants probably will cost more to build than conventionally fuelled plants, Herron said that "the total fuel cost of the nuclear plant must be below perhaps 1.5 mills/kwh if 7-mill nuclear power is to be achieved."

The major areas in which costs must be reduced if heavy water reactors are to realize their promise for low-cost power, he said, appear to be:

"Zirconium cladding costs must be reduced to less than half their near-future levels, particularly in conjunction with the use of uranium oxide as fuel, to permit high exposure levels without radiation damage and fuel-element failure.

"Heavy-water leakage and inventory charges must be reduced. As noted . . . these might be over 1.0 mill/kwh, which is entirely too high to be competitive. There is considerable hope in Canada that such cost reduction is feasible.

"Continuous charge-discharge devices must be developed at a reasonable capital cost.

". . . one promising method might be mentioned of reducing the capital cost of reactors by eliminating control rods and using a variable moderator level to adjust reactivity. This has the advantage of lengthening the time needed between shutdowns, of eliminating the cost of control rods, of saving considerable cost in pressure vessel fabrication, and of markedly reducing the close, expensive tolerance mandatory in reactor cores using control rods.

"The elimination of control rods has been contemplated in the design of the Nuclear Power Demonstration Reactor in Canada. In the U. S., American-Standard has conducted considerable work on various boiling variable-moderator reactors," which results in only a small reactive penalty, cheaper and more reliable fabrication, and in a lower moderator temperature.

THE MONADNOCK
53 West Jackson Blvd.
Chicago 4

LONG RECOGNIZED AS
Headquarters for Office Space
FOR
Engineers
Architects
Patent Attorneys
Manufacturers'
Representatives

ALDIS & COMPANY Management

A nationally-known business address

U.S. Engineers Make Great Contribution

American engineers are making tremendously significant contributions to the economic development of the turbulent Middle East, it was reported in Chicago to a joint meeting of the University of Illinois Branch of the American Society of Engineering Education and the Student Engineering Society. The speaker at this joint session was Thomas J. McNeil, former foreign service officer for the United States Information Service and at present Eastern Manager of Soiltest, Inc. of Chicago.

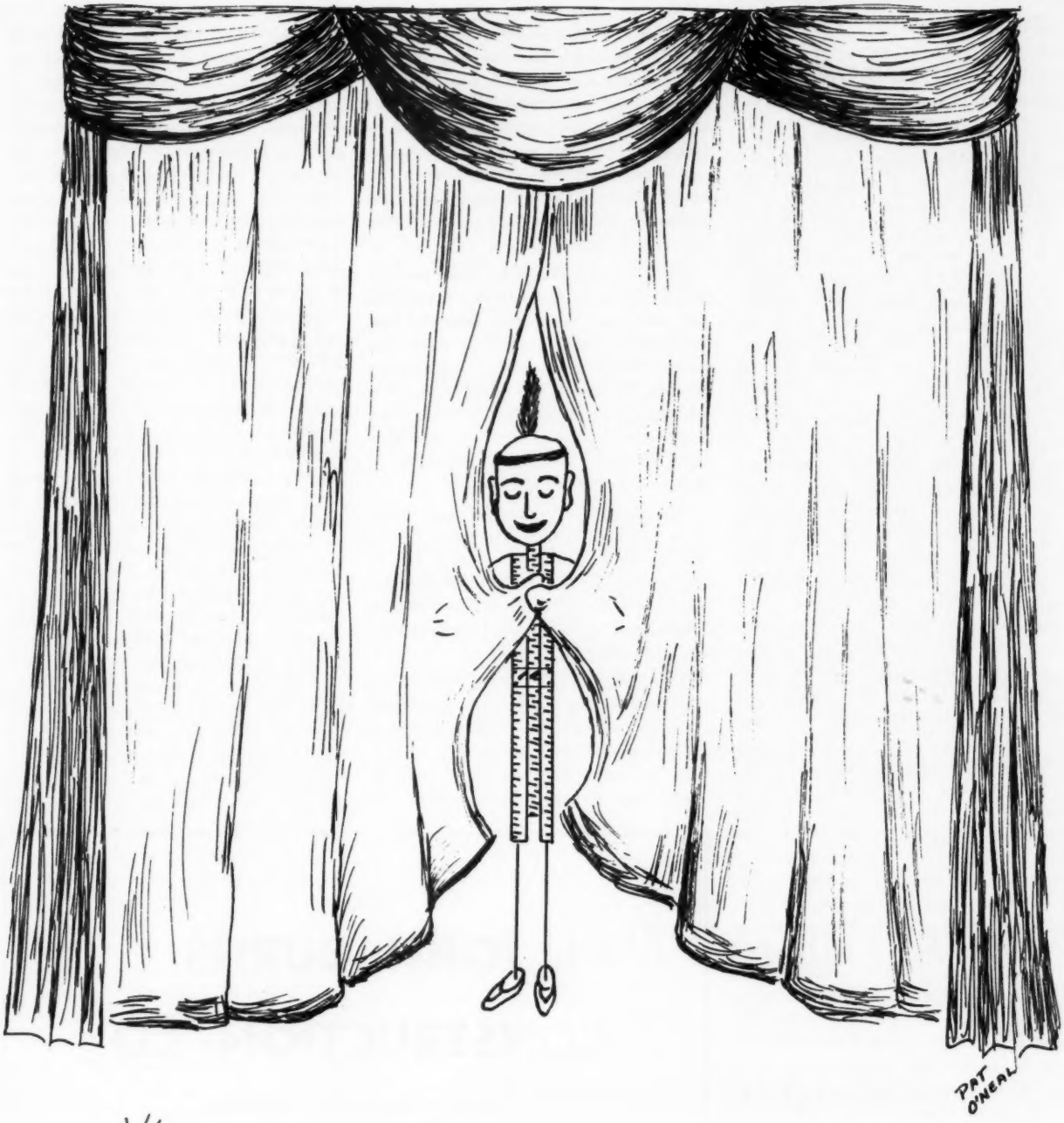
Illustrating his talk with slides made during a recent visit to the Middle East and Europe, McNeil described the road-building, highway, dam and irrigation projects on which literally hundreds of top American engineers are working as being capable of bringing about economic stability to these underdeveloped areas that will help insure them against the blandishments of the Soviets.

"We don't hear too much about the activities of these Americans, on a far-off dam project, surveying a desert road or running tests on soil samples for irrigation programs, but their professional efforts and the friendly relations they establish with their local engineering counterparts give us bonds of friendship that will in many ways prove more significant than certain political activities," said McNeil.

Fred W. Trezise, associate dean of engineering of the university introduced the speaker, and H. R. Goppert, president of the Chicago Division Branch, University of Illinois ASEE, presided over the meeting.

Nylon Protect Props

Propellers for trawlers and other small boats are being coated with nylon in Denmark, reports *Product Engineering*. The advantages are that they are light in weight, resistant to fouling and to cavitation erosion.



THE SHOW IS OVER

We wish to thank all those who took an active part in our MEMBERSHIP DRIVE

ENGINEERS and ENGINEERING EDUCATION (Continued from Page 6)

appears to be a fair consensus by quoting from a letter recently received from my sister. She is a graduate of the University of Missouri with degrees of A.B. and M.A. Over an elapsed period of 50 years she has had a total of 16 years of teaching experience in public and private high schools. Her subjects are the now largely discarded or neglected ones — English, Latin, German, Spanish, history and government. This is what she said:

"The high school youngsters of today are anything but the ones we knew in our high school days. The teenager of today is so aggravatingly opinionated, irresponsible, uninhibited, and completely devoid of ambition, that you feel as though you are talking to the Tin Man of the Wizard of Oz when you try to instruct him. This philosophy of 'Don't frustrate them, don't give them complexes and don't hem them in' has bred a gang of uncontrollable and undisciplined brats. I hope the pattern will change before my grandchildren reach the teen age . . ."

Confirmation of these views indicating a deterioration of moral standards comes to me from two sources. During the entire war period, my deputy was Rear Admiral L. B. Combs, who since 1948 has been head of the Department of Civil Engineering at Rensselear Polytechnic Institute. Some five years ago he told me that he was deeply disturbed by the attitudes of many of his students who needed financial help. When he suggested that they borrow from the Loan Fund at the Institute, at a nominal rate of interest and with long pay-back period, he was told almost invariably, "I don't want a loan, I want a gift."

The other incident occurred several years ago during a visit of Dr. Frank Sparks to Pittsburgh. At that time he was president of Wabash College and was promoting the work of the Council for Financial Aid to Education. Among other things, he mentioned that the total of the unused loan funds of all American colleges was approximately $52 millions and that they had great difficulty placing them because the young folks wanted gifts, not loans!

We have heard it said by advocates of huge Federal Government appropriations for scientific and engineering scholarships that too many of our top high school graduates fail to go to college for lack of funds. Let me quote some figures from a recent bulletin of the Engineering Manpower Commission of Engineers Joint Council and the Scientific Manpower Commission (January 13, 1958):

Of the 1,196,500 senior class population of the country in 1956, the top five per cent were selected to take the first competitive examination for the National Merit Scholarship Corporation's awards. Of the 58,158 participants, 556 were granted scholarships. An additional 4,226 for who funds were not available were awarded certificates of merit in recognition of their abilities.

The 4,226 recipients of certificates were surveyed ten months later. Of the 73 per cent who replied, only 40, or less than 1 per cent of the total eligibles, reported that they were not then attending college, and of these, 19 expected to attend in the near future!

The Bulletin states "Although we are not in any way suggesting that these statistical findings have direct extrapolatable national implications, it is remarkable to note that where a valuable mechanism of talent identification was provided, *considerable evidence was accumulated showing the highest possible current rate of utilization of our most talented high school students.*"

Dr. H. S. Turner, our vice-president—Research and Development commented on this Bulletin as follows: " I have always contended that a student who really 'hits the books' in high school and comes up with good marks can find a way to go to college—we don't need a massive U. S. Government scholarship program. We do need to build more motivation toward academic excellence and higher education into those students who have the basic mental machinery."

And Dr. J. C. Warner, president of Carnegie Institute of Technology, and a director of Jones & Laughlin Steel Corporation, made this statement: "I have a feeling that too much is being said about the economic barrier to higher education. In my opinion, lack of motivation is a much more serious barrier. I believe it is just as possible now as it was when I entered college 42 years ago for an able young man, strongly motivated toward a career in science or engineering, to find a way to obtain an education. Furthermore, there has been a tremendous increase since the war in the scholarship and loan funds available to give financial aid to students. Let me say it this way . . . a strongly motivated and gifted student

JOHN BURNS

CONSTRUCTION CO.

JOHN F. O'MALLEY, PRESIDENT

CEntral 6-9776

105 WEST ADAMS STREET

CHICAGO

can usually find a way to get an education."

Bricks and Mortar

The fourth essential is adequate plant facilities. It is true that our physical plant is now inadequate to meet the demands made upon it. As our population increases and our industrial operations become more complex technically, the number of technical personnel measured as a per cent of the total working force increases. But I wonder whether we are making efficient use of the educational plant we already have. Certainly, we must give our teachers the equipment they need to do their jobs. But we have become so addicted to the "numbers game," i.e., the need for vast numbers of engineers and scientists that in many instances we have lost sight of the importance of quality. Let me quote here again from Dr. Warner. In a recent address, he said: "I have spoken of numbers because we obviously need these numbers of well educated engineers and scientists to keep going our technology-based economy of ever increasing complexity.

"But we need to think about quality, too. An adequate number of truly creative scientists and engineers educated to highest levels of competence may be more important to America than numbers. Actually, the great new ideas, the break-throughs, in both pure and applied science and in other scholarly fields, come from a relatively few individuals. How many ordinary physicists would it take to make a contribution equivalent to that made by Fermi? It simply does not make sense to expect a reply. As I have often said, this is an area in which two half-wits do not make a wit."

Permit me to digress here for a moment to raise a question which has been discussed with far more heat than light, namely, the place of the humanities and social sciences in an engineering curriculum. I have long believed that while a knowledge of *things* is important, it must fall far short of achieving its fullest value unless it is accompanied by a knowledge of the *meanings of things*. Science and engineering are devoted to the pursuit of the knowledge of things, while the humanities and social sciences, and especially religion, can be used to learn the meanings of those things. True values are measured in terms of the growth and development of humanity and to achieve those values we must be aware of the meanings of the facts which science and engineering reveal.

I have mentioned the organization which I had the honor to head during World War II. The Sea Bees were called upon to build, maintain, and operate naval bases of all kinds throughout the world. It was inevitable that they should have to meet challenges in fields far different from those in which they had received specialized training. It was my experience, often repeated, that those officers, who had a broad training in the humanities and social sciences to supplement specialized engineering training, were far better equipped to grapple successfully with new and unpredictable circumstances.

A Summary

Let me here summarize what I have endeavored to set forth in the foregoing.

My considered judgment is that before we yield to the panic engendered by Sputniks 1 and 2 and other claimed advances in Soviet capabilities, we should make a thorough and unhurried appraisal of the adequacy of our entire educational structure in the four areas I have mentioned, beginning with the grade school and proceeding through the graduate schools. Decisions made under the stress of hysteria are usually wrong.

There is no denying the fact that there is room for improvement in the things we are now doing. We might even learn something from Russia. The Soviets, early in their history, adopted the so-called progressive system of education, probably because it is egalitarian and socialistic. But when it comes to military matters, at least, they are hard-headed realists. And it did not take them long to learn that the essential characteristics of the American system, as formerly practiced, would yield the best results. Our entire social structure at one time was erected on the concept of the need for individual incentive, competition and commensurate reward. Americans have always been great competitors and they have been anxious to see those who excel receive the fruits of their labors. This was the incentive for extraordinary effort. As I am sure you are aware, the Russians have now adopted this concept for their educational system in which the competition is intense but the rewards for excelling are very great.

We Americans have taken the other road in much of our educational work. We have abandoned the concept of individualism and concentrated on the group. We have largely eliminated incentive and we are educating our youth

W. H. LYMAN CONSTRUCTION CO.

General Contractors

•

134 N. LA SALLE • CHICAGO • RANDOLPH 6-0200

to be content to live in an egalitarian society like the ants and the bees.

That process produces no giants. Rather it produces a race of intellectual pigmies.

Much has been said in recent months of the comparative excellence of the Russian education system, notably in science and technology. There is no doubt that Russia is using education as an instrument of national policy with emphasis on quality as well as quantity. In the curriculum which all must follow, the courses required during the ten years of elementary and secondary schooling between the ages of 7 and 17 place great weight on mathematics, physics, chemistry, biology, geography, Russian language and literature, foreign language, history and physical culture. As far as I have been able to ascertain there is no mention of courses in co-educational cooking, personal grooming, automobile driving, the social graces, esthetic dancing, band, and similar diversionary subjects which now infest many of our high school curricula.

You have noted, perhaps, that up to this point I have devoted my discussion largely to grade and high school education. I believe that, by and large, the scientific and engineering instruction in our institutions of higher learning is adequate. Given properly processed and adequately prepared raw material, I feel that our colleges and universities can produce a superior finished product.

If I were to offer a suggestion with respect to the curricula of engineering schools, it would be that there should be more time and effort devoted to study of the humanities and social sciences. We are prone to lose sight of the fact that scientists and engineers, like other individuals, must take their places in society and discharge their duties as members of a community. To do this effectively, they must have knowledge of the obligations of the citizen to the social order, of our economic system, and of how government should (and actually does) function.

I do not intend to imply by anything I have said heretofore that we should attempt to imitate the Russian system of education, which cannot be wholly divorced from the brutal authoritarianism of their political and social institutions. Our concept of the nature of the universe and of man's place therein is far different from theirs and therefore our social institutions must necessarily differ from theirs. I firmly believe that every social order derives its sanctions from the prevailing concept of the cosmic order.

Our American society is based on individualism. But it is not an undisciplined individualism. The Founding Fathers held that individual freedom must be exercised within the limitations imposed by the moral code which, as a minimum, I would define as the Ten Commandments and the Sermon on the Mount. If we are to charge individuals with the responsibility for voluntary self-discipline, we must do our utmost to see that they have sufficient education to achieve understanding in order that they may grow in wisdom. It is only in this way that each of us can make his maximum contribution to that enhancement of human values which is the ultimate goal of our efforts.

The Latest Way To Raise the Roof

Not only are they erecting rubber buildings these days, but they are putting up frame houses with rubber bags, reports *Product Engineering*. These are "demountable homes," in which walls and roof unfold at the homesite to become four rooms and bath. Erecting them used to call for 16 men and a crane. Now, an inflatable bag does the trick in three minutes. It is put under the roof section, and inflated. The roof is then supported by props, the bag deflated, and down sinks the floor—right into place.

Reentry Problem May be Solved

A family of inorganic materials that "could play a major role in the solution of severe reentry problems" of rockets and space ships, was described in Montreal on Apr. 22 at the Canada-United States Chemical Engineering Conference.

It was said that the materials are able to function "in areas where all other known materials break down." There are many methods of manufacture and a wide variety of production techniques in the production of the materials, it was pointed out.

The conference, which is sponsored by the American Institute of Chemical Engineers and the Chemical Institute of Canada, also was told by John H. Lux, of Haveg Industries, Inc., Wilmington, Del., and Norbert H. Noland, Reinhold Engineering and Plastics Co., Inc., Norwalk, Calif., that the fabrication of the materials which will withstand temperatures from 2,000 to 10,000°F, has led to thinking "in terms of fabricated parts for use at 15,000 to 25,000°F, and tomorrow we may be looking for materials for even more drastic conditions. These will challenge our thinking to an even more radical degree than has been possible in the materials area in the past. We have succeeded almost invariably in the past, we expect that our scientific knowledge and ability will enable us to continue this performance."

The two engineers, in a paper, "Plastic Bound Inorganics for High Temperature Construction," said that "Haveg compounds are not metals, plastics or ceramics, but a combination developed

L. L. WELDY & ASSOCIATES, INC.

- **SORGEL ELECTRIC CO.**
  — Dry Type Transformers, Reactors, Load Centers
- **SPRAGUE ELECTRIC CO.**
  — Power Factor Correction Capacitors
- **ELECTRIC DISTRIBUTION PRODUCTS, INC.**
  — Plug-in & Feeder Uni-Bus
- **EMPIRE BOLTED PRESSURE CONTACT SWITCHES**
- **EEE CO.**
  — Load Break Switches, Isolators, High Voltage Cubicles
- **KYOVA FIBER PIPE CO.**
  — Fiber Duct

4201 Irving Park Road SPring 7-8575 Chicago 41, Ill.

for high temperature operation. At high temperatures, the organic binder is pyrolyzed or reacts slowly with the high melting inorganic silicates, giving a surface which has the ability to resist erosion and the conductance of heat while most of the energy is reflected from the surface and subsurface back into the flowing stream of gases.

"Among the items made on production schedule at the present time are blast tubes for use at temperatures approaching 6,000°F, insulators, insulator adapters, motor cases, rupture discs, throats, jet vanes, jetavators, combustion chambers, nose cones, high temperature gas duct work and many others."

The operating time of these inorganic materials, they said, "varies with the operating temperature, the ultimate being a 20 second run with temperatures ranging from 9,000 to 12,000°F. At these times and temperatures, a one-half inch thick disc of this material showed very little erosion and no cracking. This suggests that these materials could play a major role in the solution of severe reentry problems."

Corrosion Show to be Held at NACE Meet

The 1959 Corrosion Show of National Association of Corrosion Engineers, held concurrently with the NACE 15th Annual Conference, will be in the same building in which technical symposia and technical committee meetings will be held. The show and conference will be held in the Sherman Hotel, Chicago, March 17-19, 1959. Corrosion Show booths will be located in the mezzanine and exhibition hall area of the hotel.

Officials say physical arrangements for presenting the show are unusually good. The hotel has recently been remodeled and special provisions have been made for the speedy and efficient handling of exhibit material. With the show and the conference in the same building, no time will be lost going to and from the exhibition and those attending the technical sessions can get to the show at all times.

Firms interested in the show may get complete information by writing to R. W. Huff, Jr., National Association of Corrosion Engineers, 1061 M & M Building, Houston 2, Texas.

Banks, Gas Meters—both Reliable

Banks, it is said, never make mistakes. Accuracy has become a byword. But much more exacting are the scientific measuring operations which precede the billing of monthly gas and electricity service bills. As a matter of fact nothing else that is regularly bought is so accurately measured.

To keep these meters as precise as possible the Illinois Power Company has built a centralized meter service building at Decatur, Illinois, which is the most complete in the country. There gas meters and delicate electric meters with their jeweled movements are tested and reconditioned, and transformers, reclosers and rubber goods are serviced.

The problem, to place all these functions under one roof and keep the operation efficient was solved by engineers of the Fruin-Colnon Contracting Company working closely with the owner's representatives, by applying modern material handling methods to the job shop nature of the work.

Gas meters are held at uniform temperature for 24 hours in the air conditioned repair department. Their calibration is checked "as found" on automatic conveyorized gas meter proovers. The paint is then stripped in a continuous conveyorized strip, rinse and dry unit. A recirculating conveyor delivers them to repair benches and also transfers the repaired meters to the conveyorized "as left test proovers." After a final pressure test the meters are carried by conveyor through an electrostatic paint booth and drying oven. They are then tagged and warehoused in cargo-tainers.

Large gas meters are handled by lift tables and overhead conveyors in an adjacent department and painted with the same electrostatic equipment.

Air conditioning of this department was complicated by the fumes produced by soldering, stripping and painting operations. Pressurizing with air that was not air conditioned allowed this to be accomplished without excessive increase in air conditioning load.

Single phase electric meters are handled by conveyor through as found test, repair stations and as left test, with convenient in process storage arrangements. Automatic calibration equipment is used with electronic computers for automatic printout. A conveyorized unit for washing glass meter covers strips paint, washes, rinses and dries to obtain spotless covers.

Special departments are also arranged for calibration of three phase meters, repair of transformers, reclosers, oil switches and rubber tools and a standardization laboratory is provided for calibration of testing equipment. Ample warehouse space is provided to allow continuity of work and service.

The building consists of masonry walls which are of brick and concrete blocks. The walls of the high bay area are of fluted aluminum insulated with fiberglass. Limestone was used for the window trim, entrance panels and wall coping. The multi-purpose 3-inch roof material serves as a structural deck, acoustical ceiling, insulation and provides high reflectivity. Illumination is maintained at 100 to 120 foot candles in all areas where precise calibration work is done. Air conditioning is used everywhere except in the warehouse section.

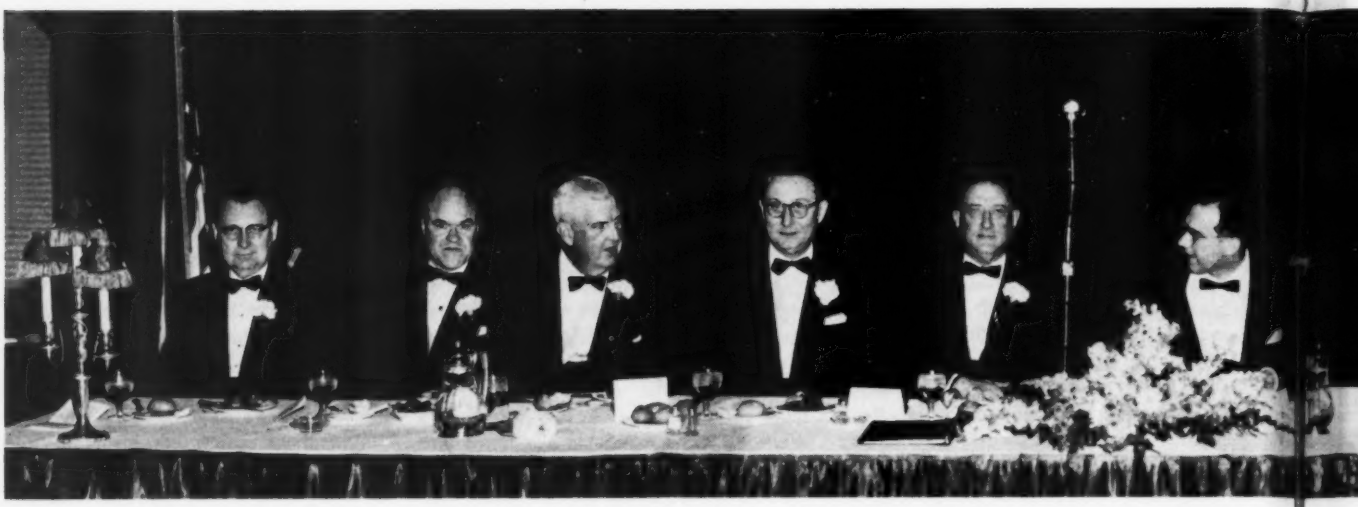
Chicago's Largest Office Building

A key location of convenience and prestige—that is the Insurance Exchange Building. A limited amount of space is currently available, and we will be glad to tell you what we have, if you will write to

INSURANCE EXCHANGE BUILDING

L. J. SHERIDAN & CO.

Management Agent
175 West Jackson Boulevard
Chicago 4
Telephone WAbash 2-0756



National representatives of the participating societies: (l to r) W. R. Marston, WSE; M. V. Maxwell, ASME; H. W. Johnson, AIMME; O. G. Smith, President of WSE; Ben Moreell, Dr. J. T. Rettaliata, Chairman, Washington Award Commission; J. A. Logan, ASCE; E. G. Norell, AIEE.

The Washington Award for 1958 was presented to Ben Moreell at a dinner in the Drake Hotel on May 9. Admiral Moreell, the 35th recipient of this, the highest honor which can be given an engineer by his fellow engineers, is Chairman of the Board and former President of Jones & Laughlin Steel Corporation.

The Washington Award Dinner, which annually attracts nation-wide interest and attention, was attended by hundreds of the nation's leading executives, industrialists, and officers in the armed services.

The Award is conferred for accomplishments which "preminently promote the happiness, comfort, and well-being of humanity" and is embodied in a bronze plaque. The plaque was presented to Mr. Moreell by Mr. Ormas G. Smith, 1957-58 President of Western Society of Engineers, and Chief Engineer at Illinois Bell Telephone Company on behalf of: American Society of Civil Engineers, American Institute of Electrical Engineers, American Institute of Mining Metallurgical and Petroleum Engineers, American Society of Mechanical Engineers, and Western Society of Engineers.

Above: Admiral Moreell, Washington Award Chairman J. T. Rettaliata, and O. G. Smith, President of Western Society.

History of Award

The Washington Award was founded by John Wattson Alvord in 1916. Mr. Alvord, President of Western Society of Engineers in 1910-11, in a letter to the President of Western Society and its Board written on January 6, 1916, said in part,

". . . It has long been my observation that there are numerous instances where the engineer serves the public amid difficulties and often in an inconspicuous way, but with such ability that he accomplishes some particularly valuable results for the benefit of the community. Such achievements are often only known and not always properly acknowledged even by the profession to which he belongs, and they not infrequently entirely escape public notice.

. . . Being desirous of promoting a better appreciation by the public of able work accomplished by engineers for the public welfare, and, further, of encouraging among engineers themselves a broader understanding of their opportunities for public usefulness, I desire to see established by the Western Society of Engineers an honor award—by medal or other tribute—to be annually presented to that engineer whose particular work in some special instance or whose services in general have been

THE 1958 WASHINGTON AWARD PRESENTATION

noteworthy for their merit in promoting the public good."

Over the years, these precepts as set forth by Mr. Alvord have been vigorously adhered to by the administering society—Western Society of Engineers.

The honor of receiving the Washington Award has gone to such persons as: Herbert Hoover (1919), Orville Wright (1927), Charles F. Kettering (1936), Ralph Budd (1941), Henry Ford (1944), Senator Ralph Flanders (1948), Henry T. Heald (1952), and Charles E. Wilson (1955). Without exception, each recipient of the Washington Award has, as Admiral Moreell, demonstrated the dynamic leadership and initiative its founder had in mind.

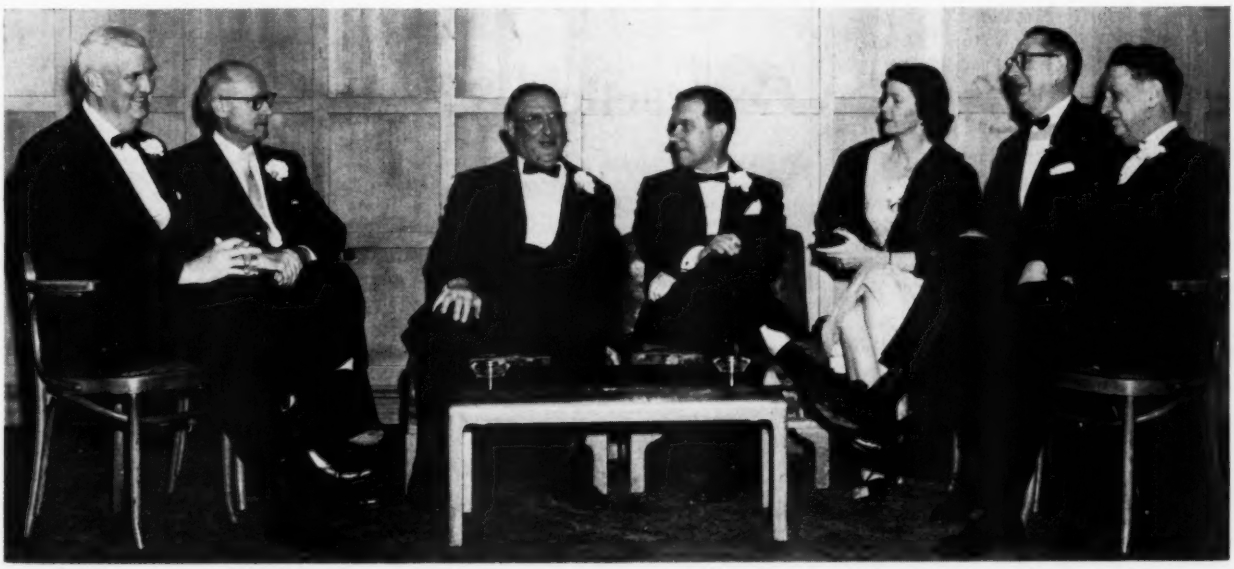
Admiral Moreell served for over 30 years in the U. S. Navy, rising to that rank as the only non-Annapolis graduate ever to do so.

Dr. John T. Rettaliata, President of the Illinois Institute of Technology and Chairman of the Washington Award Commission said in his remarks,

". . . Mr. Moreell has demonstrated one of the characteristics for which the Washington Award is given—a deep and abiding concern for the welfare and betterment of society."

Moreell Founds Sea Bees

". . . After the Japanese attack on Pearl Harbor and their subsequent sweep of many American Bases in the Pacific area, it became evident that, in order to build the bases necessary to carry on the Second War, the United States needed construction workers and engineers—who could fight as well as build. The proof of this was the slaughter of hundreds of civilian construction



Above, left to right, Hjalmar W. Johnson, George L. Jackson, Ben Moreell, John T. and Mrs. Rettaliata, Ormas G. Smith, and J. Earl Harrington.

Some associates and well-wishers line up with Ben Moreell (carnation in lapel).

and engineering personnel on Guam and other American bases.

"Seeing this tragic loss of life, Admiral Moreell conceived and brought about the organization which, though military in nature, had the working out of construction and engineering problems peculiar to war time as the primary objective. Admiral Moreell's brainchild became known as the 'Sea Bees.' During the course of the war, the Sea Bees were responsible for building and maintaining more than 900 bases and stations throughout the world.

". . . Ben Moreell has written and spoken frequently in support of his views on individualism and constitutional government. He is, in fact, an excellent example of what the individual may attain in our free society. Therefore his combination of dynamic charity, creative imagination, and vigorous administrative initiative stand as lasting tributes to Mr. Moreell—and to this nation as well."

The Story of a Fishing Pole

The evolution of a hollow, spun glass fishing rod into a unique "hot stick" for working on live overhead electric lines was traced in Washington, D.C. on Apr. 30 at the Middle Eastern District Meeting of the American Institute of Electrical Engineers.

The tale was told by Erroll Dunbar, of the Potomac Electric Power Company, Washington, during a safety symposium, moderated by John W. Gore of the Bethlehem Steel Company.

The fishing rod, which was 22 feet long when its 4½-foot sections were extended, was converted by the rod manufacturer and made 28 feet long and calibrated so that it would show sag and clearance readings. Since then when fitted with proper tools it has been used for switching, removing porcelain cutouts, as a lamp replacer, as a recloser, a tree pruner, steel and limb cutter, to read ammeters, and even may be used to pick fruit, Dunbar said.

"Beyond the limited field covered by these experiments," said he, "a great deal of hot line tool work can be accomplished, or aided by use of this hot stick. The tool is still in its infancy as far as practical use is concerned and there are still a few problems that must be solved to prepare it for the rugged duty which will undoubtedly be imposed upon by electric utility men. Aided by such improvements, it is a safety tool which would seem to be a necessity on every line, trouble and emergency truck in the utilities of this nation."

Energy Conference Papers List Available

The latest nuclear research in the application of atomic energy to the engineering industry will be presented at the 1958 International Conference on the Peaceful Uses of Atomic Energy to be held in Geneva, Sept. 1-13, 1958.

The Document Service of The Chronicle of United Nations Activities has inaugurated a complete service to supply the engineering industry with materials on the conference. Available immediately are the lists of papers to be presented. Write to: Engineering Document Service, The Chronicle of United Nations Activities, 234 West 26 Street, New York 1, N.Y.

Contracting & Material Company

Engineers and Contractors

★

1235 Dodge Ave., Evanston, Ill.

ROgers Park 4-1295 GReenleaf 5-6960

Heavy Power Needs

The daily electrical requirements for a city of 20,000 people—that's the estimated amount of electricity to be consumed each day on the nine and one-half mile Congress branch of Chicago's new, traffic-free West Side Subway, according to Walter J. McCarter, general manager of Chicago Transit Authority.

Power for the Congress branch will come from four existing substations—Franklin, Hermitage, Kolmar and Forest Park—which will supply 600 volt direct current for the six main line feeder sections and two yard sections on the line.

Midway between the substations, three tie circuit breakers have been installed at Morgan, Homan and Lombard to improve voltage for greater reliability and distribution of power over the connecting adjacent sections.

CTA buys its power from Commonwealth Edison Company at 9,000 or 12,000 volts alternating current, then converts the power in its substations to the 600 volt direct current used on the rapid transit system.

Heavy Duty Power Rail

The heavy duty power rail on the new branch is the same type used on all subways throughout the system. The rail weighs 144 and one-half pounds per yard as opposed to the 80-pound-per-yard power rail used on elevated structures.

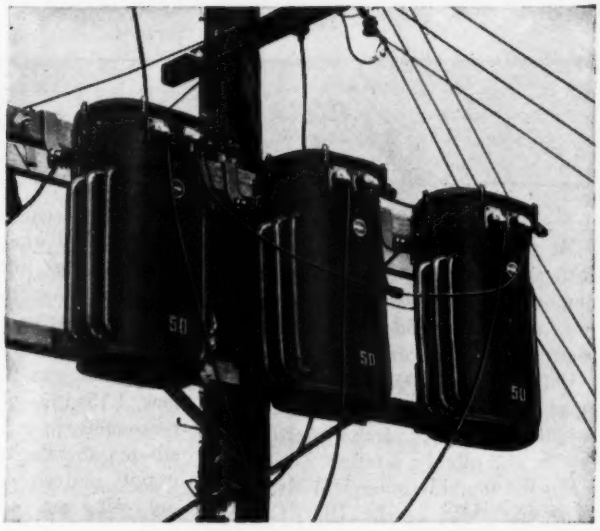
The present subway emergency alarm system will operate in the new extension from the Loop, west to Morgan street. The alarm operates from boxes identified by blue lights in the subway spaced about 450 feet apart. Operating the box alarm cuts off power on either of the two tracks in the sections adjacent to the box. The box then immediately sends a message to the power supervisor in the Merchandise Mart. The power supervisor quickly goes to work to determine the cause of the power failure or difficulty, attempts to correct it, or have it corrected, and then can throw a switch from the Merchandise Mart putting power back into the lines.

An additional advantage in keeping trains running without interruption is the system of crossovers on the West Side extension of the new subway. Five crossovers at five points along the power line plus a middle track about 1,000 feet long just west of Morgan street, sectionalize the power feeder system so that when trouble occurs on the line, trains can switch to other tracks and power rails with no service interruption. These crossovers are manually operated and can accommodate train traffic from either direction.

Saving in Travel Time

Chicago's new West Side Subway, open for regular service on June 22, will save passengers up to 30 per cent in travel, according to McCarter.

Prominently displayed illuminated signs will indicate the fast running time from each of the 14 passenger stations into the Loop. From the farthest point, Des Plaines terminal, Forest Park, to the Loop, a distance of 9.5 miles, running time is only 23 minutes, said Mr. McCarter, on this world's first rapid transit railway combined with a grade-separated automobile expressway.



Three 50 kva obround transformers on a single-pole structure provide 33⅓% more capacity and 15% less bending moment on the pole than three 37½ kva round tank design transformers.

Here's How L-M's New Obround Design Cuts Construction Costs

The potential capacity of all your transformer structures is greatly increased when you specify L-M's lighter, smaller, obround transformer.

You can now hang three 167 kva obround transformers on a two-pole structure. Three 50 kva transformers or one 167 kva go on a single-pole structure. A 50 kva obround transformer can hang on a Class 2 pole or a 25 kva on a Class 4 pole. This additional pole capacity greatly reduces rebuilding costs.

Less Weight—Shorter Moment Arm

L-M's obround transformer tank design reduces the amount of oil required for cooling and brings the center of gravity of the transformer closer to the pole. The combination of less weight and shorter moment arm distance substantially decreases the total bending moment on the pole and crossarms, and thus increases the potential capacity of all transformer structures. New obround design retains all outstanding Round-Wound® performance characteristics.

For more information on L-M's obround transformer and other L-M products, see Phil McLaughlin, C. W. ("Tiny") Puent, or Stanley Reed; or phone our Chicago sales office and warehouse, Melrose Park; phone Fillmore 4-5570; in Chicago, AUstin 7-6781.

LINE MATERIAL Industries 270-R
McGRAW-EDISON COMPANY

Transformers—Capacitors—Reclosers
Protective Equipment—Street Lighting
Power Switching Equipment—Regulators
Line Construction Materials—Fibre Conduit.

New Products

As described by their Manufacturers

Voltohmmeter

A new vacuum-tube-voltohmmeter with an input impedance of 22.0 megohms and other advanced characteristics has just been introduced by the Simpson Electric Company of Chicago, Illinois.

Called Model 311, this new instrument is approved by the National Service Managers of Admiral, Motorola, and Zenith, and offers a number of improvements not found in other VTVMs.

Among them is the DC/AC ohms probe (supplied with the unit) featuring a new "Timesaver Tip." This is an exclusive Simpson development which permits *hanging* the probe on a lead wire for continuous readings, and also provides positive pressure contacts for point-to-point measurements.

Model 311 gives peak-to-peak readings of complex AC voltages, as well as sine waves. Peak-to-peak and RMS values are located on the same scale for simultaneous reading. With an accuracy of p/m 3% on the low DC voltage scale, Model 311 also gives close measurement of the low values encountered in transistorized circuitry.

One of the accessory probes available is an RF unit capable of handling AC voltages up to 150 volts RMS or 400 volts peak-to-peak up to 100 megacycles.

The meter in this new VTVM is a 4½-inch "Wide-Vue" type. The tester case is metal and measures 7½" x 5⅝" x 4½" deep. Price with DC-AC/ohms probe, ground lead and Operator's Manual is $64.95. Export models for 220 v, 50-60 cycles can be supplied at $74.95.

For further information contact Midwest Engineer, Key 501.

Conveyor Unit

A new Rapistan live roller conveyor unit, with 1.75" diameter rollers, has been introduced by The Rapids-Standard Company, Inc. of Grand Rapids, Michigan, manufacturers of the Rapistan line of gravity and power belt conveyors, hand trucks and casters, and conveyorized live storage racks.

The new horizontal live roller conveyor is designed for medium duty especially on jobs where there is considerable accumulation of cases and cartons, and where live roller conveyor does a better job of smooth, breakage free handling, than free run gravity conveyor assisted by occasional power belt booster.

According to Rapistan engineers, the new 1.75 Live Roller conveyor is so reasonably priced that it can be substituted for the usual combinations of gravity and power belt conveyors without going out of line on one's budget.

Special construction of the new 1.75 Live Roller unit has been aimed at keeping it a safe live roller conveyor to work with. Light spring pressure keeps the drive belt against the carrier rollers, and only slight pressure downward releases any items that might be caught between rollers and belt.

The new Rapistan Live Roller is capable of speeds ranging from 22 FPM to 100 FPM with a load capacity of 25 pounds per foot of conveyor length. Standard speed is 56 FPM. The drive is supplied by a ¼, ⅓ or ½ hp motor, depending on the load requirements. The drive pulley consists of two 6-inch diameter Rapistan MB rubber tread wheels which are locked to a 1-3/16 inch diameter drive shaft.

Available in section lengths of 5 or 10 feet, the new Live Roller unit has a maximum length limitation of 100 feet. Rollers come in widths of 12, 18 or 24 inches and may be set above or below the frame, spaced on 3, 4 or 6 inch centers. The entire unit has adjustable height, and is available with reversible control for two-way operation.

For complete information regarding the new Rapistan Live Roller conveyor, write Midwest Engineer, Key 502.

S10 Stoper

Modifications of its S10 stoper to provide greater feeding pressures and to insure positive oiling to chuck parts has been announced by the Le Roi Division, Westinghouse Air Brake Company, Milwaukee, Wis.

By offering an optional 2⅜" diameter feed leg, greater feeding pressure is obtained for hard rock drilling. The former 2¼" diameter feed leg is still available. In addition, the bleed port in the feed cylinder has been removed to provide greater feeding pressures in both size feeds.

The air passages to the feed leg have been enlarged to give faster "leg-drop" when push button is pressed.

An oiling port has been added to give chuck parts positive oiling, thereby reducing wear of these parts.

Additional information on the S10 stoper modifications may be obtained by writing Midwest Engineer, Key 503.

Output Shaft

A new type output shaft has been introduced by Brevel Products Corp., manufacturers of low cost fractional horsepower motors. Incorporated in the new spur gear motor, it permits coupling to input shaft or rotating mechanism much more easily. The special design of the motor itself allows greater power in small space.

This new output shaft motor is just one of the many spur gear, worm gear and other types of motors made by Brevel, who specialize in slow speed

EDWARD'S POLE & WIRE CONST., Inc.

Electrical Underground & Overhead

GLENVIEW, ILLINOIS

Glenview 4-7887 **Glenview 4-8090**

motion. Motors are designed to provide maximum efficiency at minimum cost. Standard motors with single or dual shafts, variable shaft lengths, speed and rotation are available to suit application. Special motors will be made to specifications. All are precision engineered for quiet, trouble-free operation.

For detailed information, bulletins and prices on this new output shaft and spur gear motor as well as other fractional hp motors, write to Midwest Engineer, Key 504.

Vibration Monitor

A small vibration monitor designed primarily for protecting costly rotating and reciprocating equipment, now is helping unfold secrets in bearing failures at laboratories of Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

J. C. Spohr, Jr., supervisor of engineering laboratories, said Vibraswitches (vibration monitor) are the best mechanical means yet tested for detecting fatigue failures in bearings. He explained the monitors automatically stop the test apparatus at the instant failure occurs. This enables Hyatt engineers to pinpoint the location of the breakdown often leading to the discovery of the cause.

Endurance tests on bearings are carried out on special stands in machines designed to run at speeds up to 3500 rpm and to simulate, to a large degree, actual operating conditions. Many bearings under test in the 50 or more machines are destined for critical usage in jet aircraft.

Special shapes such as tapered and barrel rollers are made at the plant. Inner race, outer race, and rollers are machined from carburizing steel and conform to precision specifications.

Before using Vibraswitches on the laboratory test stands, technicians detected bearing failures through changes in sound emitted from the apparatus. This method was efficient enough when an attendant was nearby. However, Spohr pointed out, tests are conducted on a round-the-clock basis until a failure occurs. This might be anywhere from 10 to 1,000 hours, and may happen during the night when no one is present.

Spohr indicated many tests were inconclusive when failures occurred during the night. By the time attendants arrived in the morning to begin the day, the bearing under test was so badly damaged as to make further study of it unfruitful. Also, the possibility of ruining a costly piece of test equipment was always present.

The Vibraswitches are mounted directly on the testing apparatus. The devices measure only about three inches by six inches, but are extremely sensitive to changes in the normal operating vibrations of the testing equipment. Sensing even the slightest change indicating a malfunction, the device will trigger and stop the test. It also can be installed to give alarm.

With Vibraswitches now installed on many of the stands at Hyatt laboratories, bearings are mounted in the apparatus which is set in operation. Action of the device is so quick it is said almost to anticipate malfunction. To reuse, the Vibraswitch has a re-set button on its side.

Manufacturer of the vibration monitor, Robertshaw-Fulton Controls Company, said models are available for different vibration levels, hazardous locations and other special applications.

High-treadlite Switches

A new Hi-treadlite Twin Unit just introduced by Linemaster Switch Corp., America's footswitch leader, reduces wiring costs on double switches. Composed of two Hi-treadlite switches, the unit is easy to assemble. All wiring between the two switches in concealed. Only one cord is brought out. There is no added wiring, no expensive wire junctions. A bridge between units prevents accidental operation of the two switches at one time.

Designed specifically for original equipment manufacturers, Hi-treadlite switches are available in three modes of operation—single pole, double throw; single pole, double throw, double break; simulated double pole, double throw—all with high electrical ratings. Any two of these may be selected to form the Hi-treadlite Twin Unit.

The Twin Unit it 3½" x 5½" x 1¼" in size, weighs 1 lb. 12 oz. Strong steel housing and skid-proof rubber base pad assure long service life. Finished in gray hammertone, special colors, nameplates, cordsets, etc., may be ordered.

Complete information is available by addressing Midwest Engineer, Key 505.

Form Board

A new form board, a flight-free, light-tan, mat-faced product, which performs several functions in industrial construction, has been announced by Owens-Corning Fiberglas Corporation.

The new product, Industrial Form Board, is designed for installation in exposed areas in plants, warehouses, and industrial areas not requiring whiteness and light reflection.

The company said the new product completes its line of form boards which includes a deluxe type for schools and low-ceiling areas where a "concealed economy" board for areas above suspended ceilings.

Fiberglas acoustical form boards perform four functions in industrial, commercial and school construction. They serve as a permanent form for poured-in-place light weight roof decks; as an interior ceiling; as an acoustical ceiling, and as roof insulation.

The form board is incombustible and is a highly efficient thermal and acoustical form board.

GILBERT-HODGMAN, INC.

Electrical Engineers and Contractors

1625 West 75th Place

Chicago 20, Illinois

Members W.S.E. and A.I.E.E.

Professional Directory

JENKINS, MERCHANT & NANKIVIL

Consulting Engineers

Municipal Improvements — Sewerage
Power Development — Water Systems
Traffic Surveys — Industrial Plants
Flood Control — Recreational Facilities
Airports — Investigations and Reports

805 East Miller Street
Springfield, Illinois

ROBERT W. HUNT COMPANY
ENGINEERS

Inspection • Tests
Consultation
•
Engineering Materials
•
Cement • Concrete • Chemical
Physical and Metallurgical
Laboratories

810 S. Clinton St., CHICAGO 7. *And All Large Cities*

DE LEUW, CATHER & COMPANY

CONSULTING ENGINEERS

Public Transit — Subways
Traffic & Parking — Railroad Facilities
Expressways — Industrial Plants
Grade Separations — Municipal Works
Urban Renewal — Port Development

150 North Wacker Drive, Chicago 6

San Francisco — Toronto — Oklahoma City

SILAS CARTLAND P.E.

Consulting Engineer
Designer

Air Conditioning
Mechanical & Electrical
Systems for Buildings

911 Busse Hiway, Park Ridge
Ta 3-1300

U. S. FIRE PROTECTION ENGINEERING SERVICE, INC.

Chicago • Kansas City • San Francisco

Specialists in — FIRE
• Control Construction
• Prevention Methods
• Protection Equipment

CONSULTANTS — DESIGNERS

Chicago Office — 53 W. Jackson Blvd.
Tel. WEbster 9-3358

SARGENT & LUNDY

ENGINEERS

140 S. DEARBORN STREET

CHICAGO, ILLINOIS

LAND SURVEYS
INDUSTRIAL - COMMERCIAL - RESIDENTIAL

LEGAL DESCRIPTIONS
PROPERTY LINES —
RIGHT OF WAYS —
SUBDIVISIONS —
TOPOGRAPHY —
CONSTRUCTION
LINES—GRADES

S. PASQUINELLI
REG. ILL. IND. WISC.

NATIONAL SURVEY SERVICE, INC.
Registered Engineers and Land Surveyors
134 NO. LA SALLE ST. • RAndolph 6-7608

SOIL TESTING SERVICES, Inc.

Consulting Engineers

John P. Gnaedinger
Carl A. Metz
Clyde N. Baker, Jr.
C. J. Aimi

Soil Investigations,
Foundation Recommendations and Design,
Laboratory Testing

1827 N. Harlem Avenue, Chicago 35, Illinois
Milwaukee, Wisconsin - Portland, Michigan
Kenilworth, N. J. - San Francisco, California
Havana, Cuba

ESTABLISHED 1913

WALTER H. FLOOD & CO.

CHEMICAL ENGINEERS

Inspection and Testing
Of Materials and Structures
Buildings, Roads, Streets, Airports
SUPERVISION OF CONSTRUCTION
CONCRETE CORE CUTTING

6102 S. BLACKSTONE AVE. — CHICAGO 37
Branch—1332-4 N. Westnedge Ave.
Kalamazoo 53, Mich.

Henry L. Hoeppner
Consulting Engineer

Temporary Address
211 Imperial St.
Park Ridge, Ill.
Tel: TAlcott 3-4288

E. R. GRITSCHKE
and
ASSOCIATES,
Incorporated

Consulting Engineers

Designers of
MECHANICAL and ELECTRICAL SYSTEMS
for BUILDINGS

11 S. LaSalle St., Chicago 3, Ill.

◆

Your Card* on this or the opposite page will acquaint others with your specialized practice.

* Restricted to Professional Architects and Engineers

Professional Directory

Battey & Childs

ENGINEERS
231 So. LaSalle Street
Chicago 4, Ill.

INDUSTRIAL PLANTS
POWER PLANTS
REPORTS

DESIGN **SUPERVISION**

A. A. Lipsey & Associates
ENGINEERS

Structural Design
Industrial Buildings
Commercial Buildings
Foundations
Investigation
Reports — Appraisals

21 E. BELLEVUE CHICAGO 11
WHitehall 4-3298

STANLEY ENGINEERING COMPANY

Consulting Engineers

Hershey Building — Muscatine, Ia.
208 S. LaSalle St. — Chicago 4, Ill.

JOHN F. PARMER
Engineers

Designing
Consulting
Investigations
Reports
Supervision

Structural System
Industrial Bldgs.
Foundations
Pavement
Bridges

173 W. Madison St. **Chicago 2**
FRanklin 2-4198

VERN E. ALDEN CO.
Engineers

Design and Supervision of Construction

Industrial and Chemical Plants
Steam Power Plants

33 North LaSalle St.
Chicago 2

GREELEY AND HANSEN
ENGINEERS

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. STATE STREET, CHICAGO 4

HAZELET & ERDAL
Consulting Engineers

Bridges — Foundations
Expressways — Dams — Reports
Monadnock Block
Chicago

403 Commerce Bldg., Louisville
Dixie Terminal Bldg., Cincinnati
Oding Bldg., Lansing

Chas. W. Cole & Son

Engineers & Architects

South Bend, Indiana

CONSOER, TOWNSEND & ASSOCIATES

Water Supply, Sewerage, Flood Control and Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas and Electric Transmission Lines

360 East Grand Ave., Chicago 11, Ill.
9½ Indiana St., Greencastle, Ind.

Alvord, Burdick & Howson

ENGINEERS FOR

Water Works, Water Purification, Flood Relief, Sewerage, Sewage Disposal, Drainage, Appraisals, Power Generation

20 N. Wacker Drive • Chicago 6

Telephone: CEntral 6-9147

LESTER B. KNIGHT & ASSOCIATES, Inc.

EVIDENCE OF EXPERIENCE

- **Management Engineering**
- **Industrial Engineering**
- **Plant Engineering**

CHICAGO NEW YORK WASHINGTON, D. C

Your Card* on this or the opposite page will acquaint others with your specialized practice.

* Restricted to Professional Architects and Engineers

Engineering Societies Personnel Service, Inc.
Est. 1918

Chicago	Detroit	New York	San Francisco
84 E. Randolph St.,	100 Farnsworth Ave.,	8 W. 40th St.,	57 Post Street
ST 2-2748	TE 3-1090	WI 7-5878	SU 1-5720

The following items are furnished by the Engineering Societies Personnel Service, Inc., a non-profit, self supporting, personnel service sponsored by W.S.E., A.I.E.E., A.I.M.E., A.S.C.E., A.S.M.E., S.N.A.M.E., E.S.D., E.C.S.F. Replies should be addressed to the nearest office.

Members of the societies shown above may publish a free advertisement on this page by registering at the nearest E.S.P.S. office. A weekly bulletin of Positions Open is available by subscription at $3.50 a quarter for members and $4.50 a quarter for non-members.

PLACEMENT FEES: The service is operated on a co-operative basis, whereby those actually placed in positions by the Service pay a fee in accordance with the established placement fee rates, which is 4% of the annual salary to members and 5% of the annual salary to non-members. HOWEVER MANY EMPLOYERS EITHER PAY FULL PLACEMENT FEE OR NEGOTIATE FEES.

POSITIONS AVAILABLE

C-6872 FIELD ENGR. Grad. CE or San. know dragline & dozer work. Duties: Field engr. mosquito abatement project. Should be eligible for Ill. Prof. Engr. License. Liberal vacation & other benefits sal. to $8000 dep. on exper. & qual. loc. Ill. employer might negotiate the fee.

C-6870 DESIGNERS & FIELD ENGRS. Grad. CE; 2+ yrs. in design or field work—on highway & toll roads for a consultant sal. $6-800 Loc. Ill. employer will pay the fee.

C-6865 ELECTRICAL ENGR.-ELECTRONICS EE 2 yrs. exper. in electronics. Duties: Elect. engr. with electronic exper. to work in reliability environmental lab. Lay out & perform tests & also supervise technicians. Also willing to work at testing. as well as supv. sal. abt. $8000 loc. Chgo. employer will negotiate the fee.

C-6864 ELECTRICAL DESIGNER Grad. EE abt 35; 5+ yrs. on industrial bldg. work, know electrical code. Duties: All design work on power distribution. lighting & power layouts on industrial bldg. work for a consultant sal. $7-750 loc. Chgo.

C-6863 STRUCTURAL DESIGNERS (A) Grad. CE; 5+ yrs. in steel & reinforced concrete design floor slabs, columns, etc. for post offices, all board work on design (B) Architect for design of Post Offices. salaries $6-700+ $-12.00 per diem allowance. Duration 6 mos. to 2 yrs. for a consultant loc. Washington, D.C.

C-6862 ELECTRONICS ENGRS. BS or equiv. age to 40; 5 yrs. research in circuit devel. know circuitry. Duties: To perform experimental circuit devel. work in circuitry, transistor circuits, radio frequency circuits sal. $8-10,000 (B) 5 yrs. in micro-wave component design, propogation. Duties: To carry on research projects in this field sal. to $12,000 loc. Chgo. employer will pay the fee.

C-6861 METALLURGISTS (A) NON-FERROUS SUPV. MS — prefer PhD age over 28; 2-10 yrs. in res. & devel. know non-ferrous alloys, incl. titanium, zirconium, vanadium, columbium & tungsten. Duties: Tech. & admin. direction of a group involved in devel. of high temp. & special purpose alloys sal. to $12,000 (B) **SR. PHYSICAL METALLURGIST** MS-prefer PhD age 30-40; 2 yrs. in res. & devel. know physical metallurgy Duties: Phase diagram & isothermal transformation studies in addition to the application of physical & metallurgical principle to casting of metals, alloy devel. & fracture studies sal. $7200-9000 (C) **POWDER METALLURGIST** BS to PhD age to 30; 1 yr. res. & devel. know basic sciences & metallurgy. Duties: Performing research on dispersed phase activities, high temp. alloys, fiber metallurgy, cermets & nuclear fuel elements sal. to $9,000. (D) **JR. PHYSICAL METALLURGIST** BS age to 28; 1 yr. exper. res. & devel. know physical metallurgy Duties: Phase diagram & isothermal transformation studies; investigation of fatigue & fracture, and nucleation processes sal. to $7200 (E) **FOUNDRY METALLURGIST** BS age to 40; 5 yrs. in res. & devel. know foundry operation & fundamentals of metal castings. Duties: To conduct various research programs in the area of foundry methods as project leader sal. $7200-9,000 loc. Chgo. employer will pay the fee.

C-6858 STRUCT & REINFORCED CONCRETE DESIGNER Grad. Engr. age to 50; 2+ years in steel & reinf. concrete design either bldg. or eqpt. design for a mfgrer of material handling eqpt. sal. $120-130 wk. loc. Chgo.

ENGINEERS AVAILABLE

889-MW: MECHANICAL ENGRG. RESEARCH & DEVELOPMENT 47 BSME 25 yrs. exper. in this field with emphasis on product devel. & research in automotive industry. Individual & group contribution, developing into managerial status. Desire responsible staff engrg. position.

890-MW: PLANT OR PRODUCTION MANAGER 35 BSME; 10 yrs. strong mgmt. background; 7 yrs. admin. mfg., ind. engrg., prod. control, plant engrg., maint., prod. des., devel., tooling. qual. control, purch., ind. rel., cost. Proven integrity, leadership, organization cost cutting ability. Good sense of values. Employer desiring dynamic admin. must offer challenge & future. Negotiate salary.

877-MW: COMBUSTION ENGR. (metal working-petroleum) 30 BSME 4 yrs. exper. as combustion engr. for large container mfgrer. 4 yrs. exper. with steel mill as mech. maint. foreman & student engr. $9500 Chgo. area.

881-MW: EXEC. ASST. OPER. SUPV., ENGR. SALES. 48 BSME Diversified ind. engr. exper. considerable contacts exper. from foreman thru supt. levels $8200+ Chgo.

Human Relations Study Important

The study of human relations by those engaged in engineering leadership or management "may well be as important" as keeping abreast of technical and economical problems, the Middle Eastern District Meeting of the American Institute of Electrical Engineers was told in Washington, D.C. on Apr. 29.

"It is in (the) area of motivation and human relations that many of us need to give considerable thought if we are going to lead our engineers to make the most of their potential abilities," said Lee A. Kilgore of the Westinghouse Electric Corporation, East Pittsburgh, Pa., in a paper presented at the meeting.

One of the strongest drives motivating creative work by engineers, said Kilgore, is the "desire for recognition from their management and their fellows."

"Management," he emphasized, "must continue to give considerable thought to providing opportunities for deserved recognition."

This means a personal and "warm human interest in the individual" by the engineering leader, he said.

"Every man," he pointed out, "has his own picture of where he stands in the minds of those whose respect he values, frequently referred to as his status. He will strive to maintain his status and often is insulted if anyone fails to recognize it. If we do anything to tear down a man's stature, he is depressed or he is resentful. If we can sincerely build him up, he is encouraged and motivated."

Kilgore also advised that management be somewhat tolerant of the eccentricities of the more creative engineer "who may have some traits in common with artists and other creative professionals."

"The creative and imaginative mind must have a freedom and a willingness to question and examine all the rules and conventions," he said.

Care should be taken, too, he said to avoid conflict of interest and resulting resentment between two engineering groups, within the same organization. He cited development and design groups as examples.

"The design group," he said, "may resent the fact that the development boys get time to concentrate and work out the nice theoretical solutions; and the development man may feel frustrated because he solves a problem, writes a report, and then his idea may or may not be used, and he seldom has the chance to control its further development."

Leaders of the two groups, he said, should take the initiative in making men of both groups feel a part of the larger team.

"Leaders of the two groups should get together and plan common objectives," he said. "Then it is desirable to get key people of both groups together, or at least consult such people in both groups about the combined objectives so that they all see what their contribution is and recognize the other fellow's part."

Missile Telemetry Range is Extended

A small, powerful amplifier has been developed to extend the operating range of aircraft and missile telemetry, it was reported in Baltimore, Md. on June 2 at the National Telemetering Conference in the Lord Baltimore Hotel.

The amplifier will provide up to 200 watts of very high frequency power output from inputs of 1 to 2 watts, William H. Swain, of Electro-Mechanical Research, Inc., Sarasota, Fla., told the conference which is sponsored by the American Institute of Electrical Engineers, the American Rocket Society, the Institute of Aeronautical Sciences and the Instrument Society of America.

The measured power gain of the amplifier is generally greater than 20 decibels and plate efficiency is 50 per cent or greater at 2 watts input.

The amplifier is 3 inches wide, 3⅜ inches high, 10 inches long and weighs 3.8 pounds. "Stability is provided for a variety of environmental conditions," he said. "Power output is stable to better than 1 db without retuning over the range of temperatures from —55°C to 100°C. Vibration in excess of 10G is accommodated to 2000 cps with less than 200 cps peak effective frequency deviation. A shock of 60G applied along any axis for 11 milliseconds does not impair operation."

New Scholarships Established at ITT

Two new scholarships have been established at Illinois Institute of Technology, Chicago, by the Central Solvents and Chemicals Co.

Called the William J. Hough Scholarships in honor of the company's founder, the scholarships will provide $400 a year for each of two students with either junior or senior standing in chemical engineering.

Students who intend to work in the paint, adhesive, chemical, or metal fabricating industries in the Midwest will have preference for the annual scholarships.

Final selection of the recipients will be made by the Illinois Tech scholarship committee.

The Easy Life

Americans now eat 24 per cent of their beef as hamburgers, reports *Food Engineering*. The reason for this: It takes the work out of eating.

The Haines Company

Ventilation & Air Conditioning Contractors

Sheet Metal Fabricators

— Welding —

1931 WEST LAKE STREET

CHICAGO 12, ILLINOIS

SEeley 3-2765

Reviews of Technical Books

Air Conditioning

Home Air Conditioning — Installation and Repair, by Joseph Derman, Floyd Makstein, and Harold Seaman; John F. Rider Publisher, Inc., New York 11, N.Y. 1958. Price $3.50.

This new up-to-the-minute text supplies a firm foundation in the theory of air conditioning. The material and its presentation simplify the theoretical concepts involved and provide the basis of building practical know-how for installation and repair.

Starting with the basic physics of air-conditioning, the book covers components such as compressors, condensers, capillary tubes and their functions. Typical window and smaller package installations are thoroughly described and illustrated.

With a minimum of formulas and a maximum of step-by-step explanations this book does an excellent job in discussing the operation, maintenance, repair and selection of air conditioner units.

Technicians in fields allied to air-conditioning and the complimentary fields of radio and television, might be wise to add this book and its information to their technical background.

Zone Melting

Zone Melting, by William G. Pfann, John Wiley & Sons, Inc., New York 16, N.Y. 1958. Pages, 236. Price $7.50

This new book supplies comprehensive details on theory and practice. The author is an inventor of many devices and developer of most of the work described in the volume.

Much of the material contained in *Zone Melting* appears for the first time, such as the information on techniques of zone refining, and a complete set of computed zone-refining curves which show impurity concentrations throughout an ingot as a function of the member passes. Other features of the volume include the fundamentals of freezing a two-component system, and a full description of solidification methods for growing and controlling properties of semiconducting crystals.

Following the introduction, the chapter headings consist of: normal freezing and the distribution coefficient, theory of zone refining, techniques, applications, continuous zone refining, zone leveling and single crystal growth, methods of perturbing the concentration, and temperature-gradient zone melting.

Mr. Pfann's book is the latest in the Wiley Series on the Science and Technology of Materials (J. H. Hollomon, Advisory Editor). Since 1935, the author has been in the Metallurgical Research Department of the Bell Telephone Laboratories. He holds 25 patents in metallurgy, transistors, and zone melting methods, and he has received the Mathewson medal of the A. I. M. E. and the Clamer medal of the Franklin Institute in recognition of his innovations.

Analog-Digital Techniques

Notes on Analog-Digital Conversion Techniques, published under the joint imprints of John Wiley & Sons and The Technology Press of the Massachusetts Institute of Technology. The new book was prepared by five staff members in the Servomechanisms Laboratory of the MIT Department of Electrical Engineering: Alfred K. Susskind (editor of the volume), John W. Brean, Martin S. Osman, Douglas T. Ross, and John E. Ward. 1958. Pages, 410. Price, $10.00.

This study is the outgrowth of a Special Summer Program on the subject held at MIT last year. The authors stress fundamental concepts which are expressed in quantitative terms where possible. Inherent engineering limitations are taken into consideration and the relative merits of various approaches are weighed.

The book's subject matter is divided into three parts, the first pertaining to systems of digital information processing that influence the specifications for analog-to-digital and digital-to-analog conversion devices. The second part presents a detailed engineering analysis and evaluation of a variety of conversion devices. The third section is devoted to a case study based on development work done at the Servomechanisms Laboratory. The volume incorporates the authors' Laboratory experience with numerical control of machine tools and digital instrumentation that directly records experimental data in a form suitable for processing by digital computers.

Power Distribution

Basic Electrical Power Distribution, by Anthony J. Pansini, P.E., John F. Rider Publisher, Inc., New York 11, N.Y. Two volumes. Price, $4.80 per set.

This latest "Picture Book" course from John F. Rider Publisher, Inc., simplifies and explains for even non-technical personnel of Utility Companies how electrical power is created and brought to the consumer. The basis of this course was used in a training program he devised for a well known Eastern Utility Company.

This course does an excellent job of teaching the fundamentals of electrical power distribution beginning with the generator and following the journey of electrical energy through overhead and underground constructions, substations to the meters at the consumer end. Coverage includes transformers, capacitors, switches, potheads and other necessary equipment. Numerical values for current and voltage, etc., are consistent with those found in the field.

Each idea is made crystal-clear with one idea to a page and at least one bold, dramatic illustration to visualize the concept involved. The course progresses step-by-step so as to provide the background needed for each advanced idea offered.

Fully Automatic Gas Pipelines Predicted

The early advent of fully automatic gas pipelines was predicted at Baltimore, Md. on June 2 at the National Telemetering Conference in the Lord Baltimore Hotel. The conference was sponsored by the American Institute of Electrical Engineers, the American Rocket Society, the Institute of Aeronautical Sciences and the Instrument Society of America.

"The art of pipeline cybernetics is in its infancy and before long, long distance transmittal of telemetering intelligence will make possible closed loop operation of pipeline flow and entry of the automatic pipeline," said F. Vinton Long, chief of the Communications Sections, Engineering Department, Texas Eastern Transmission Corporation.

Mr. Long pointed out that as yet there are no fully automatic gas pipelines, operating without human supervision from a previously programmed set of instructions.

"Automation of pipelines," he said, "requires the use of feedback in the control system and we just don't have the facilities at this time. It requires just an awful lot of telemetered information, but now the means of obtaining such information is available and very shortly someone will operate an automatic pipeline."

Automation of gas pipelines is a problem different from liquid pipelines, due to high pressures, input and output at different places, change in pipe size, etc., he observed.

Reynolds Announces New Textured Finish

A new mill product, textured-finish aluminum sheet, has been announced in Chicago by Reynolds Metals Co.

Availability of the sheet, expected to be of great interest to designers, was disclosed at the Design Engineering Show, where samples were on display.

The product has a surface similar to sanded sheet, according to R. P. Kytle, Jr., director of industrial products for Reynolds. It gives a uniform mat surface which offers an interesting medium for designers. In addition, scratches and other minor surface abrasions are less noticeable on the textured surface.

Textured sheet is expected to find many important applications in automobile trim, appliances, furniture, stove hoods, decorative materials and novelties, Kytle said.

The sheet is available in all standard sizes. The extra cost for providing the textured surface is very small, according to Kytle.

Reynolds identifies the product as Reytex sheet. Only one type of Reytex has been produced to date, but the company plans to add two other forms of textured sheet in the near future.

Hollerbach Comments On Metal Lath Use

L. C. Hollerbach, manager, building material sales, Wheeling Corrugating Company, Wheeling, West Virginia, recently was re-elected president of the Metal Lath Manufacturers Association at the group's annual meeting in Cleveland, Ohio.

G. W. Matthews, general marketing manager, metal lath and commodity products division, Inland Steel Products Company, Milwaukee, Wis., was elected vice-president.

Commenting upon the construction field at this meeting, both Hollerbach and Matthews indicated that with the emphasis on quality construction, metal lath production and sales are bound to increase.

Hollerbach revealed that, at present, personnel concerned with metal lath and plaster construction are making much headway in emphasizing the adaptability and fire-resistance of these products to architects and construction men in general. Demands for metal lath in school building programs are said to be expanding.

Hollerbach is chairman of the Executive Committee. Other members of this committee are H. B. Brown, merchandise manager, building steel products, United States Gypsum Co., Chicago; G. J. Casey, manager of sales, metal lath products, Truscon Steel Division, Republic Steel Corp., Youngstown, Ohio; and C. Webb, vice-president, sales, Alabama Metal Lath Co., Inc., Birmingham, Ala.

E. G. Collins, manager, metal lath sales, National Gypsum Co., Buffalo, N. Y., was re-appointed chairman of the Technical Committee. Other members of this committee are: A. H. Blyth, sales and promotion manager, merchant trade division, Ceco Steel Products Corp., Chicago; J. F. Hurlbert, vice-president, Bostwick Steel Lath Co., Niles, Ohio; A. T. Krueger, product manager, metal lath, Inland Steel Products Company, Milwaukee, Wis.; and J. D. Waxman, president, Goldsmith Metal Lath Company, Cincinnati, Ohio.

Airborne T.V.

Airborne closed-circuit television is being used in a system that pictures constantly for the pilot the exact location of his plane in relation to the ground, reports *Electronics*. The system is called the horizontal situation display. It correlates information fed into it by navigational computers and instruments and presents a TV picture in the form of a map of the terrain below the plane. A plane image, projected over the map, corresponds to the pilot's position over the terrain.

AMbassador 2-3489
GReenleaf 5-4414

WM. E. SCHWEITZER & CO.
GENERAL CONTRACTORS
Contractors for Industrial Construction

2207 Dodge Avenue
Evanston, Illinois

News of Engineers

Dr. William L. Everitt, MWSE, dean of engineering at the University of Illinois, presented the Illinois Institute of Technology commencement address on Friday, June 6.

Some 375 undergraduates and graduate students received degrees from **Dr. John T. Rettaliata,** MWSE, Illinois Tech president, during the commence-exercises at 8:15 p.m. in Orchestra Hall.

Everitt is chairman of the committee on accreditation and education of the Engineers Council on Professional Development.

A member of the Department of Defense research and development technical advisory panel on electronics, Everitt is on the board of editors of the Institute of Radio Engineers. He is 1954 recipient of the IRE Medal of Honor, and 1946 recipient of the Exceptionally Meritorious Civilian Award.

Everitt, past president of the IRE and the American Society of Engineering Education, is past chairman of the Engineering College Administrative Council. He also has been on the board of directors of the American Institute of Electrical Engineers and IRE.

Director of the operational research staff in the office of the chief signal officer, U. S. Army, from 1942 to 1946, he also has been a member of the communications section, National Defense Research Committee and of the electronics committee, Joint Research and Development Board.

* * *

The election of John M. Trissal as vice-president and chief engineer of the Illinois Central Railroad, effective May 1, was announced by Wayne A. Johnston, president.

Trissal was born in Chicago and was graduated from Parker High School. Upon graduation from the University of Illinois in 1925, he went to work for the Illinois Central Railroad as draftsman in the Engineering Department. In 1927 he became junior engineer and in 1928 assistant engineer, and in 1930 he was promoted to assistant electrical engineer—fixed property. Trissal earned a professional degree from the University of Illinois in 1940. In 1945 he was named superintendent of communications and electrical engineer and filled that post until he was advanced to assistant chief engineer in 1950. He was made chief engineer in 1956.

Trissal is active in the American Railway Engineering Association serving as vice-chairman of the highways committee and in the Electrical and Communications sections of the Association of American Railroads. He was chairman of the Electrical Section in 1945-46. He is chairman of zone 13 of the waterways committee and a member of the train operation, control and signal committee of the Association of American Railroads. Mr. Trissal is a member of the American Society of Civil Engineers and the Chicago Engineers' Club.

* * *

Charles H. Mottier, MWSE, vice-president in charge of engineering of the Illinois Central Railroad, retired as of April 30. He served with the railroad 47 years, the last 13 of which he has been vice-president. Major Illinois Central projects in which Mr. Mottier has played important roles are the development of air rights at Chicago, building of the New Orleans consolidated rail terminal, construction of the first automatic freight classification yard in America, and renewal of one of the largest railroad bridges in the world.

Mottier was born in 1888 on a farm near Gibson City, Ill., and attended Gibson City High School. He entered the University of Illinois in 1906 and was graduated in 1910 with a degree in civil engineering. In 1923 he was awarded a professional degree in civil engineering by the university. His first railroad job was with the Burlington at Chicago. That was in 1910 as an instrumentman and inspector on track elevation at Chicago.

In 1911 Mottier joined the Illinois Central where he worked in the bridge department successively as masonry inspector, construction foreman, draftsman, designer and assistant engineer. Mottier was named office engineer in 1920 and engineer of design in 1924. Eleven years later he was promoted to engineering assistant. He became chief engineer in 1941, four years later he was elected vice-president and chief engineer, and in 1956 he became vice-president in charge of engineering.

Since 1920 Mr. Mottier has been engaged in such important projects as the $260 million program for the reconstruction and electrification of the railroad's Chicago Terminal. During and after World War II he directed rehabilitation of the fixed property of the Illinois Central. He played a guiding role in the 10-year negotiations between the railroads and the City of New Orleans which resulted in the building of a union passenger terminal and extensive grade separations.

During the postwar years Mottier directed the modernization of Markham Yard south of Chicago, making it the first electronic "push-button" yard in America. The renewal of bridge spans in the Illinois Central's bridge across the Ohio River at Cairo, Ill., was another outstanding feat in his engineering

MIDWEST FORESTRY CORPORATION

Line Clearing for Better Public Relations

Post Office Box 409

Muncie, Indiana

career. Mottier has been active in the development of air rights over Illinois Central property north of Randolph Street, Chicago. The Prudential Building was the first skyscraper to utilize these air rights.

In 1948 Mr. Mottier served as president of the American Railway Engineering Association during its fiftieth anniversary and is one of its seven living honorary members. He holds memberships in the South Shore Country Club, Chicago Athletic Association, Chicago Engineers' Club, Illini Club of Chicago, and the Illinois Central Square and Shrine clubs. He has served as a member of the Alumni Board and the Advisory Committee of the University of Illinois. He also is a member of the American Society of Engineers and past president of its Illinois section. He is a member and past section president of the Western Society of Engineers.

Mottier has been author of many booklets, papers and special studies. These include *History of the Mottier Family, Property and Operations of the Illinois Central in Chicago, Illinois Central Suburban Service,* and a biography of Colonel Roswell B. Mason, first chief engineer of the railroad. He also developed the "Mottier Plan" for locating a consolidated rail terminal on the Chicago lakefront.

Mr. Mottier is a trustee of Woodlawn Methodist Church and a director and a member of the building committee of the Wesley Foundation of the University of Illinois. For many years he has participated in one of the largest Men's Bible Classes in Chicago. He recently appeared at the Chicago Sunday Evening Club as a guest speaker in its "Living Philosophies Series."

Mr. and Mrs. Mottier have traveled extensively for the last several years, and now with Mr. Mottier's retirement they plan to revisit Europe.

* * *

Two physicists at Armour Research Foundation of Illinois Institute of Technology presented scientific papers at an international conference in Brussels, Belgium, June 2-7.

Dr. Leonard Reiffel, manager of the ARF physics research department, and Dr. James J. Brophy, assistant manager, presented papers at the International Conference on Solid State Physics in Electronics and Communications.

Sponsored by the International Union of Pure and Applied Physics, the conference featured scientific reports by 200 well-known solid state physicists, about one-third of whom were from the United States.

Reiffel presented a paper on "Pressure Effects in Luminescence," a report on research being carried out by the Foundation on a contract with the Air Force Office of Scientific Research.

Brophy's paper, "Properties of 1/f Noise in Semiconductors," reported on research conducted on a contract with the Office of Naval Research.

* * *

Ernie A. Schmidt, MWSE, midwest regional sales manager, has been elected commercial vice-president of I-T-E Circuit Breaker Company, Philadelphia.

In this position, the company stated, Schmidt will continue to have sales jurisdiction over all sales activities within the states of Illinois, Ohio, Michigan, Indiana, Wisconsin, Missouri, Minnesota, Iowa, Nebraska, Oklahoma, Kentucky, Kansas, North Dakota and South Dakota. In addition, as an officer of the company, he will be in a position to render assistance in the establishment of company sales policies.

I-T-E manufactures such electrical equipment as circuit breakers, switchgear, transformers and rectifiers; also special electronic and aircraft equipment and components for military use.

Schmidt joined I-T-E in 1936 as an application and sales engineer at Philadelphia. In 1937 he moved to St. Louis and subsequently formed an agency to sell I-T-E products there. He transferred these agency operations to Chicago in 1945.

Ernie A. Schmidt

In 1948 Schmidt was appointed district manager of the first I-T-E field office. I-T-E products, prior to that time, had been sold only by agents. In 1955 Schmidt was named I-T-E's midwest regional manager.

Schmidt, a native of Nebraska, attended the Milwaukee School of Engineering and the University of Wisconsin. He then worked with several consulting firms, specializing in construction of power company central stations and similar facilities for steel mills and large industrial firms.

In 1930 he joined United Engineers & Constructors Inc., Philadelphia, where he was engaged in construction of substations for Philadelphia Electric Company and the electrification of the 30th Street Station yard of the Pennsylvania Railroad.

Active in professional groups, Schmidt is a member of the American Institute

ASPLUNDH

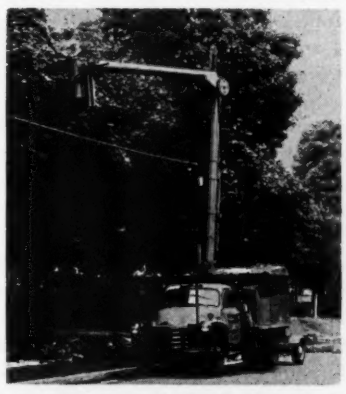
Effective and Economical

LINE CLEARANCE

and Right-of-Way work

Opening of new rights-of-way, and trimming of trees and chemical brush control on existing rights-of-way are operations which should be entrusted only to specialists.

412 N. Milwaukee Ave.
Wheeling, Illinois
Attention, Mr. Earl Reynolds



of Electrical Engineers, the Association of Iron and Steel Engineers and is on the board of trustees of the Western Society of Engineers. He is also a member of the Union League of Chicago.

Schmidt will retain his offices at Bankers Building, 105 W. Adams St., Chicago 3, Illinois.

I-T-E Circuit Breaker Company headquarters are at 19th and Hamilton Streets, Philadelphia 30. It has divisions and subsidiary companies in Pennsylvania, New York, Massachusetts, Michigan, Georgia, California and Toronto, Canada.

* * *

Arthur E. Neumer and Charles F. Fitter, both of Eastman Kodak Company, have been named program co-chairmen for the 1958 Annual Conference of the Society of Photographic Scientists and Engineers, October 6-10, at the Hotel Manger in Rochester, N.Y.

Ira R. Kohlman of Technicolor New York Corporation, general conference coordinator, also listed Mrs. Charles E. Ives of Rochester as chairman of the ladies program.

Richard van Steenburgh of the Fairchild Camera and Instrument Corporation is exhibits chairman. Joseph Mangiaracina is in charge of registration.

Scientific and engineering papers on photography and related sciences will be arranged for the technical papers program of the conference by Jerome S. Goldhammer of CBS Research Laboratories, New York.

Fields to be covered by papers will include experimental and theoretical studies, plus practical design of instruments, apparatus, and systems. Seven categories listed in an advance outline of the program include: photosensitive systems; procedures and apparatus for treatment of the exposed image; design of cameras and components; photographic optics; use of photography for scientific or engineering measurement or recording; photographic apparatus, including that used for evaluating photographic materials and specifying their performance; and data handling.

* * *

The appointment of Robert O. Offill as advisory engineer was announced by R. A. Schoenfeld, vice-president, Lindberg Industrial Corporation, Chicago. Mr. Offill was for 10 years sales manager, Westinghouse Electric Corp., Industrial Heating Division, Midwest-Southwest Regions and was associated for 12 years with Carnegie-Illinois Steel Company, Metallurgical Department.

Offill will assist Lindberg field personnel throughout the various district offices and coordinate sales activities of the company's complete line of large custom built field erected heat treating, melting and production line processing equipment.

* * *

The appointment of Stanley D. Whiteside as Staff Engineer was announced by R. A. Schoenfeld, vice-president, Lindberg Industrial Corporation, Chicago. Mr. Whiteside was for 14 years General Sales Manager of the Industrial Furnace and Oven Division at W. S. Rockwell Company and was also associated with the Metal Division of Dow Chemical Corp. and with Olin Mathieson Chemical Corporation.

Whiteside will assist Lindberg field personnel throughout the various district offices and coordinate sales activities of the company's complete line of large custom built field erected heat treating, melting and production line processing equipment.

* * *

Twenty-one top engineers, researchers and educators were honored—two of them posthumously—by the National Electronics Conference at a recognition dinner on June 7.

They are all former presidents and chairmen of the board of NEC, the nation's leading forum on electronic research, development and application.

Dr. J. D. Ryder, dean of Michigan State University's school of engineering, spoke at the dinner in the Sherman Hotel's Skyline Terrace Club. Joseph H. Enenbach, NEC president and supervising engineer of Illinois Bell Telephone Company, presented the awards.

"There men are in a large part responsible for the growth of the National Electronics Conference and the world-wide recognition it enjoys among leaders in the electronics industry and education," Enenbach says.

The honored guests, who came to Chicago from all over the U.S., were together for the first time in the 14-year history of the NEC, a non-profit organization.

Mrs. M. Dorothy Graf, widow of A. W. Graf, and Mrs. Myrtle S. Westerberg, widow of O. D. Westerberg, accepted awards.

Others honored are: Kipling Adams, dist. office mgr., General Radio Co., G. E. Anner, prof. of electrical engineering, Univ. of Ill.; Dr. C. E. Barthel, Jr., assist. director, Armour Research Foundation; R. R. Batcher, consulting engineer, Hudson Wire Co., N.Y.; H. H. Brauer, staff assist., Fansteel Metallurgical Corp.; Dr. A. B. Bronwell, pres., Worcester Polytechnic Institute, Mass.; J. M. Cage, research engineer, Hewlett-Packard Co., Calif.; Nathan Cohn, head, market development section, Leeds & Northrup Co., Penna.; W. G. Dow, prof. of electrical engineering, Univ. of Mich.; Dr. G. H. Fett, prof. of electrical engineering, Univ. of Ill.

Dr. J. E. Hobson, vice pres., United Fruit Co., Mass.; R. R. Jenness, assoc. prof. of electrical engineering, Northwestern Univ.; Dr. J. A. M. Lyon, prof. of electrical engineering, Northwestern Univ.; **E. O. Neubauer,** MWSE, transmission engineer, Illinois Bell Telephone Co.; Dr. J. D. Ryder, dean, school of engineering, Michigan State Univ.; **Dr. E. H. Schulz,** MWSE, assist. director, Armour Research Foundation; Dr. R. M. Soria, vice pres., Amphenol Electronics Corp.; W. O. Swinyard, vice pres., Hazeltine Research, Inc.; O. I. Thompson, vice pres., DeVry Technical Institute; and W. C. White, retired from General Electric Co., N.Y.

The recognition dinner was a prelude to the annual NEC exposition which is expected to attract 10,000 to Chicago next October.

NEC is sponsored by the American Institute of Electrical Engineers, the Illinois Institute of Technology, the Institute of Radio Engineers, and Illinois and Northwestern universities. Participants are: Michigan, Michigan State, Notre Dame, Purdue, Wayne State and Wisconsin universities, Electronic Industries Association and the Society of Motion Picture and Television Engineers.

Electron Microscope

A new electron microscope has been developed that will magnify the size of a specimen 100,000 times, reports *Electronics*. It will also magnify items one million times photographically.

WSE Applications

In accordance with Article I, Section 5 of the By-Laws of the Western Society of Engineers, there is published below a list of applicants for admission received since the last issue of the Midwest Engineer *magazine.*

Frederick A. Smith (Rein.), Architectural Engr., Corps of Engineers, U. S. Army, Merchandise Mart.

Charles E. Rickard, Maintenance Engr., United States Rubber Co., 2638 N. Pulaski Rd.

John E. Thompson, Gen. Mgr.-Pres., Reliable Packing Co., 1440 W. 47th St.

Louis H. T. Dehmlow, President, Great Lakes Solvents, Inc., 2530 W. Bloomingdale Av.

A. G. Petkus, Vice President, Procon, Incorporated, 1111 Mt. Prospect Rd., Des Plaines, Ill.

Wilbur C. Gates, Vice President, Guardite Company, Box 188, Wheeling, Ill.

Lester R. Sagar, Production Mgr., Dearborn Chemical Company, P. O. Box 404, Lake Zurich, Ill.

Lee W. Diestelow, Chemical Engr., Whiting Corporation, home: 2720 W. 83rd Pl.

Silberman Calls for New Type of Official

The newest thing in the electronics field is a new and very scarce type of management official, the National Federation of Financial Analysts Societies was told at the annual convention in Los Angeles.

Describing what he called "this new and very scarce type," President R. T. Silberman of the Kin Tel Division of Cohu Electronics, Inc., said:

"A new line of management blood is now being evolved in scientific industry—the composite scientist and administrator with profit consciousness. This man is the really scarce commodity in our society today. He is basic to producing real results."

Silberman, who is a well-known physicist as well as a member of the top management team of Cohu Electronics, went on to say:

"The greatest returns to investors in electronics companies will accrue from those situations where management has developed techniques to profitably convert technological developments to useful products and can exist in the highly competitive manufacturing and distribution climate that now is developing."

The day is rapidly passing, Silberman said, when a new technical ideal can be sold at any price. Particularly in electronics, new technical advances must be directly related to profitable commercial use.

New Kind of Boat Will be Produced

A boat that spits into two boats or folds to make a car trailer is headed for production, reports *Product Engineering.* The 13 foot draft is designed with two hull sections that are hinged together. When used as a trailer, a single wheel-and-spring mounting is fixed to the bottom of the unit. The trailer can double also as a sleeping compartment. The craft weighs 225 pounds and will carry 700 pounds of gear when serving as a trailer.

DUNCAN ELECTRIC COMPANY, Inc.

LAFAYETTE, INDIANA

Manufacturers of

WATTHOUR METERS — DEMAND METERS

METER MOUNTING DEVICES

MIDWEST ENGINEER *Advertisers' Index*

Vern E. Alden 23
Aldis & Company 10
Alvord, Burdick & Howson 23
Asplundh Tree Experts 29
Battey & Childs 23
Bell Lumber & Pole Co. 32
John Burns Construction Co. 12
Silas Cartland 22
Christie Electric Corp. 4
Chas. W. Cole & Son 23
Commonwealth Edison Co. ... Cover IV
Contracting & Material Co. 18
DeLeuw, Cather & Co. 22
Delta Star Division 5
Duncan Electric Co. 31
Edward's Pole & Construction Co. ... 20
Federal Pipe & Supply Co. 7
Walter H. Flood 22
Gilbert-Hodgman, Inc. 21
Greeley & Hansen 23
E. F. Gritschke & Associates, Inc. ... 22
The Haines Co. 25
Hazelet & Erdal 23
Robert W. Hunt Co. 22
Jenkins Merchant & Nankivil 22
Josam Manufacturing Co. 4
Lester B. Knight 23
Line Material Co. 19
A. A. Lipsey & Associates 23
W. H. Lyman Construction Co. 13
Midwest Forestry Corp. 28
Muncie Construction Co. 8
Nash Brothers Construction Co. 6
National Survey Service 23
Fred Nelson of Dayton, Ohio 9
John F. Parmer 23
Portland Cement Association .. Cover II
Sargent & Lundy 22
Wm. E. Schweitzer & Co. 27
L. J. Sheridan Co. 15
Soil Testing Services 22
Stanley Engineering Co. 23
U. S. Fire Protection Engineering Service 22
L. L. Weldy & Associates 14

Radio Controlled

A chemical plant located three-and-a-half miles from the Mississippi River is using a radio to control its water supply, reports *Chemical Engineering.* Pumps at the river edge are activated by a radio in the plant. Different high-frequency tones start and stop the pumps.

Obituaries

Western Society of Engineers was saddened to learn of the death of A. M. Vanderpool. Mr. Vanderpool became a member of Western Society in 1928.

He was associated with Western Electric Company for more than thirty years at the time of his passing. Sincere condolences are expressed to his family on behalf of the membership of Western Society.

AEC Announces New Boron-10 Distribution

The Atomic Energy Commission has announced a revised plan for the commercial distribution of Boron-10 materials.

Because of its neutron-absorbing qualities, Boron-10 is useful in nuclear reactor shielding and control, and in radiation detection instruments.

Boron, enriched up to 92 per cent in the isotope B-10, will be distributed by the Commission's Chicago Operations Office. While material assaying 92 per cent B-10 comprises the major portion of the enriched inventory on hand, there are available smaller quantities of material at certain lower assays. The enriched Boron to be distributed by the Chicago Operations Office is in the form of elemental Boron and the compound potassium fluoborate. Storage, packaging and shipping of these materials will be performed by the Michigan Chemical Corporation, St. Louis, Mich., under contract to the Chicago Office.

Boron enriched to greater than 92 per cent B-10 may be obtained in small quantities from the Oak Ridge National Laboratory. This material is being made available for basic research purposes. Oak Ridge also can supply certain special compounds of Boron-10 at the 92 per cent assay level, such as colloidal suspensions of elemental Boron in oil. In addition, Oak Ridge National Laboratory has available small quantities of Boron-11, ranging up to 98.5 per cent B-11 content.

The new distribution plan revises the program announced by the Commission on Feb. 12, 1957. The change was brought about by the scheduled shutdown of the Commission's enriched Boron production plant at Niagara Falls, N. Y., which, until recently, served as the major distribution point of these materials. The shutdown of this plant, announced last January, is effective July 1, 1958. Further information on Boron-10 materials may be obtained from the U. S. Atomic Energy Commission, Chicago Operations Office, Post Office Box 59, Lemont, Illinois, attention R. F. Berent, Development Contracts Division; and from Union Carbide Nuclear Company, Oak Ridge National Laboratory, Isotopes Sales Department, Post Office Box X, Oak Ridge, Tennessee.

Military-Industrial Conference Slated

A joint military-industrial conference on problems associated with suppression of interference affecting electronic equipment will be held at the Museum of Science and Industry on Oct. 1 and 2, it has been announced in Chicago.

The meeting—the fourth Conference on Radio Interference Reduction—will be conducted by Armour Research Foundation of Illinois Institute of Technology, under sponsorship of the United States Army Signal Research and Development Laboratories. The Institute of Radio Engineers Professional Group on Radio Frequency Interference will cooperate in the program.

The program will include sessions devoted to a variety of areas of research, including equipment design techniques, instrumentation and measurement techniques, practical interference reduction methods, special suppression components, and information theory applications, according to Stanley I. Cohn, conference chairman.

Inquiries concerning the conference should be addressed to Cohn at Electrical Engineering Research Department, Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

Metallurgical Society Schedules Fall Meet

The Metallurgical Society, a constituent organization of the American Institute of Mining, Metallurgical, and Petroleum Engineers, has announced that its Fall meeting, sponsored by the Institute of Metals Division, will be held in the Carter Hotel, Cleveland, Oct. 27-30, 1958, during the Metal Congress.

Among the many meetings will be 14 sessions on various phases of research in the area of physical metallurgy. Other sessions will be symposiums developed by technical committees of the Society's three Divisions, the Institute of Metals Division, the Extractive Metallurgy Division, and the Iron and Steel Division.

The Titanium Committee will hold its 7th Annual Titanium Symposium the morning and afternoon of October 28. Price trends and market analysis for titanium products, and a summary of the status and use of titanium abroad will be discussed.

The Nuclear Metallurgy Committee will have a symposium of two sessions on fabrication of fuel elements, with 15 papers planned. The Powder Metallurgy Committee will hold a meeting at which papers will take up production of tantalum powder, beryllium powder, and making molybdenum oxidation resistant. A summary on powder metallurgy highlights at the Geneva Conference on Atomic Energy will be presented.

controlled **POLE** production

Bell's *own* timber areas supply selected Western Red Cedar, Douglas Fir, and Western Larch pole stocks to Bell's *own* yards and processing plants where quality controlled poles are produced to your individual specifications.

BELL LUMBER & POLE CO.

MIDLAND BANK BUILDING MINNEAPOLIS 1, MINN.

a good advertising ▼ medium

FOR ALERT ADVERTISERS

Midwest Engineer

because . . .

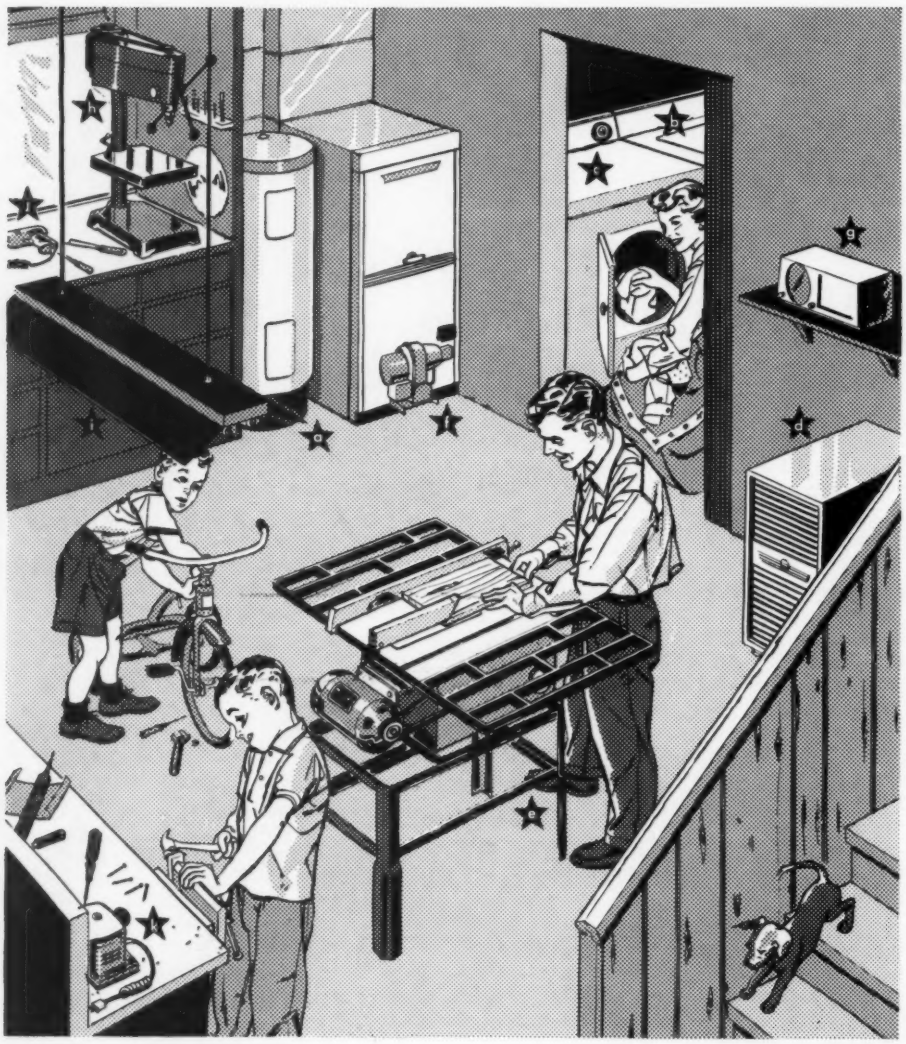
- ▼ Circulation in America's industrial and residential heart.
- ▼ The direct path to specifying, purchasing, and industrial executives — those who say yes.
- ▼ Provides coverage in all engineered industries.
- ▼ Opens a live market area for machinery, fabricated products, industrial equipment, materials of construction, parts, tools, products and services.
- ▼ The mirror of the coordination of engineering and civic interests.
- ▼ Advertising rates are extremely low for coverage of this big market.

Western Society of Engineers

84 E. Randolph Street
Chicago 1, Illinois

How many of these electric helpers have you added since 1947?... asks LITTLE BILL

☐a ☐b ☐c ☐d ☐e ☐f ☐g ☐h ☐i ☐j ☐k



You're an average family if —in the postwar years you've added six new electrical appliances. Shown here are a few typical examples.

This is why you're using far more electricity nowadays than you did a few years ago. And why life is a lot easier. But of all the things you buy today, electricity has gone up *less* than almost anything else.

So, while your bill may be a *little* higher, electricity is actually doing nearly twice as much work for the money now as it did years ago.

See how little it costs to run each of these electric helpers.

a—Electric water heater —2½ gallons 1¢. New, fast electric models deliver all the hot water a big family needs 24 hours a day.

b—Automatic washer—3 loads 1¢. Saves hours of work every week.

c—Electric Dryer—just 6¢ a load is all you pay to dry the clean electric way!

d—Dehumidifier—1¢ for 4 hours. Keeps basement dry, keeps tools from rusting.

e—Power saw—works a solid hour for 1¢. Cuts straighter, faster.

Other appliances shown include: **f—Furnace blower—½¢ an hour.** (Keeps heat even, saves you many dollars on fuel.) **(g) radio**—5 hours for 1¢, **(h) drill press**—an hour and a half of work for 1¢, **(i) ceiling fixture**—5 hours of light for 1¢, **(j) electric hand drill**—works 2½ hours for 1¢, **(k) electric sander**—only 1¢ for 2½ hours of help.

"Electricity costs less today, you know than it did 25 years ago!"

Commonwealth Edison
AND
Public Service Company

© C. E. Co.